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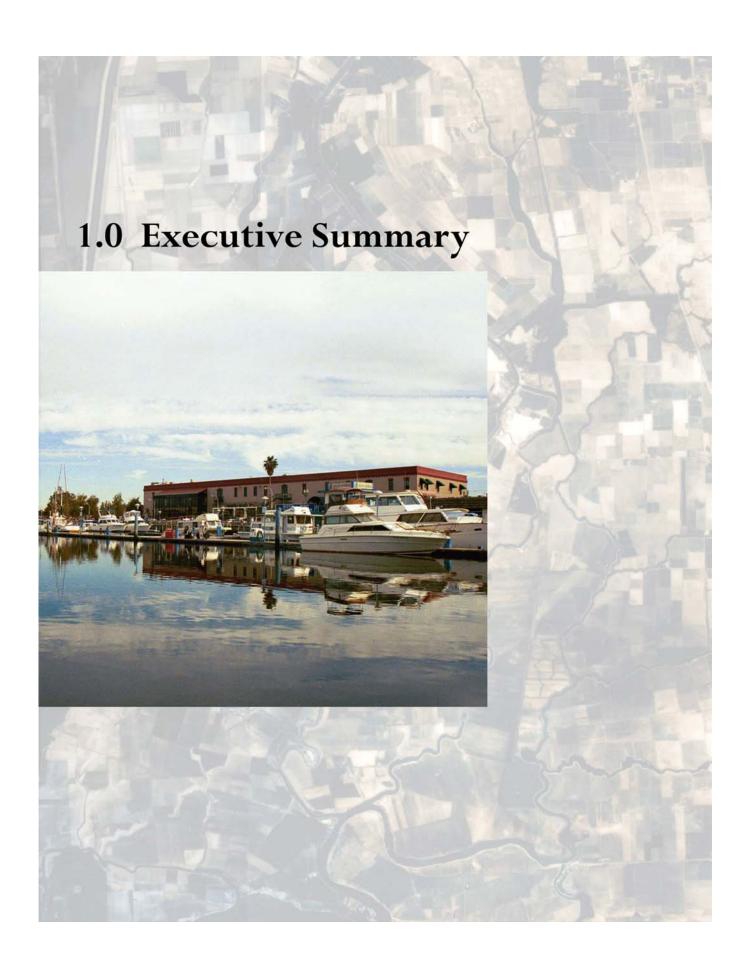
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FORWARD

This plan presents strategies and supportive findings and documentation related to Part 1 of a two part planning effort pertaining to recreation for the Sacramento-San Joaquin Delta. Part 1 presents aquatic-related recreation issues and preliminary strategies, while Part 2 will address the landside recreation counterpart with emphasis on the interaction between land and water resources. Strategy and policy content in Part 1 are intentionally brief, as the two part document is envisioned as an integral unit with Part 1 presenting aquatic conditions and preliminary findings and Part 2 presenting landside aquatic conditions with the overall summary findings and strategies developed from the synthesis of the two interrelated studies.



1.0 EXECUTIVE SUMMARY

More than two million Californians come to the Sacramento-San Joaquin Delta every year to boat, fish, water-ski, windsurf, kayak, and enjoy a place unlike any other in the West. Annual visitor days are projected to grow from 6.5 million in 2000 to 7.8 million by the year 2020. Demand for this unique freshwater recreation resource is increasing at a rate that exceeds demand simply based on California's population growth rate.

The Delta is not prepared to meet these demands. This report shows that large percentages of facilities are old and aging, the resource itself will experience significant impacts affecting recreation through CALFED programs, and there is no overriding jurisdiction with the authority to truly manage all the demands and needs for recreation in the Delta.

In light of these challenges, this document outlines a Master Strategy that the Delta Protection Commission – and other decision-making bodies – can use in planning and guiding development of aquatic recreation facilities, uses and services for the next fifteen years.

The Delta Recreation Master Strategy should be a resource in making good decisions for recreation in the Delta. To this end, planners must be able to answer these critical questions:

- What is the nature of the resource?
- What is the interrelationship between recreation and other stakeholders in the Delta?
- What are current recreation uses and trends?
- Where is activity focused and why? What types of activities are appropriate for various locations?
- What agencies or entities have jurisdiction affecting potential strategies?
- What are the stated needs of current boaters and other recreationists?
- What type of development or recreation enhancement is most appropriate in specific areas?
- How can enhancements be achieved, what is the process, and what are the obstacles?
- How much will this cost?
- Who can pay for it?

The strategy is a resource, a planning tool that provides a framework to address aquatic recreation in the Delta. Opportunities and possibilities are supplemented with hard data to justify recreational options and strategies.

Regional population growth and concurrent increases in recreation demand have impacted Delta resources; the Delta needs a cohesive recreation strategy. Without a long-range vision, the Delta may change in undesirable ways, lose boating and other recreation opportunities, and lose the character that makes it a unique and popular recreation destination.

A vision for Delta aquatic recreation includes:

- A well-maintained and safe system of waterways;
- A system of convenient access points and launching facilities distributed throughout the region sited strategically near population centers;
- A well-defined recreational resource with clear edges, nodes of activity, safe connections and links between sites, and informative signs that pertain to points of interest and potential hazards;
- Numerous waterside and landside destination points that include transient docks, boat mooring areas, and boat-in day or overnight use areas;
- Resources and facilities that are sensitive to the individual sites with designs that capture and preserve the essential character of the Delta; and
- A coherent system of unimpeded boating trails that connect points
 of interest with intriguing routes and that are further specialized
 for different modes of boating with a sufficient number of wellmaintained boating facilities for docking and boat storage.

Chapters 1 and 2 provide an overview of the planning process. Recreation is compatible with other uses and land management objectives for the Delta, is compatible with environmental objectives, and contributes to the economic viability of the Delta. For this reason, the Delta Recreation Master Strategy promotes recreation as an equal to other interests and concerns. Recreation is an integral part of the Delta, complements the Delta's natural setting, and is a boon to communities located within the region.

Chapter 3 outlines the research and data used as a baseline for this strategic planning effort. Chapter 4 characterizes the planning context with numerous regional and local jurisdictions, State, and Federal agencies. Variations in Delta geography and waterways attract different recreational activities. As a consequence, six distinct recreational zones hold a variety of opportunities and issues. Chapter 5 presents a comprehensive inventory and analysis of

privately-operated and owned facilities – their current condition in terms of deferred maintenance, and estimates for replacement, rehabilitation, or enhancement to meet current and future demands. Current deficits are significant. For instance, three-quarters of the existing dock slips serve the larger boats and only 25% are for small boats. If the trend of converting small-boat slips to larger slips continues, and no new slips are built, the percentage of small-boat slips will be reduced to approximately 10 to 15% by 2020.

In meeting the demand to the year 2020, the Delta will need an additional:

- 466 dry boat storage spaces
- 92 boat launch lanes
- 135 transient dock tie-ups
- 187 restroom fixtures
- 89 shower stalls
- 14 fuel/pumping stations

Chapter 5 also describes other improvements typically delegated to the public sector such as boat launches. The Delta has 18% of the state boating facilities but only 5% of the State's inventory of launching facilities. The public sector can enhance recreation in response to increasing demand by providing:

- New transient or courtesy docks for access to restaurants, events, and other Delta landside resources.
- Boat launch lanes,
- Boating-exclusive parks such as Delta Meadows,
- More or improved tie-up (overnight) facilities,
- Floating restrooms,
- More destinations,
- Improved shore access for hiking/walking,
- Improved wildlife habitat, and
- No charge pump-out facilities.

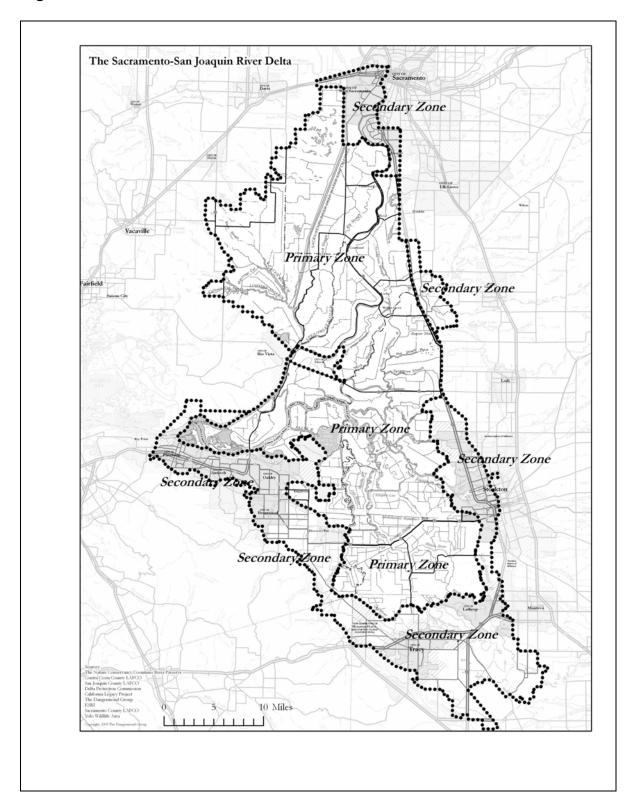
The need for new and maintenance dredging continues to emerge as an overriding problem for both public and private sectors. Natural siltation makes dredging inevitable. If not addressed, siltation blocks marinas, fills in prime recreation areas, and creates obstacles and hazards for those on the water. Although dredging may be the most critical need throughout the region, it is also the most difficult to accomplish because of the many agencies, regulations, requirements, and the costs borne by marina operators. The public sector can assist by supporting streamlining of the dredging regulatory process, and by improving coordination between agencies.

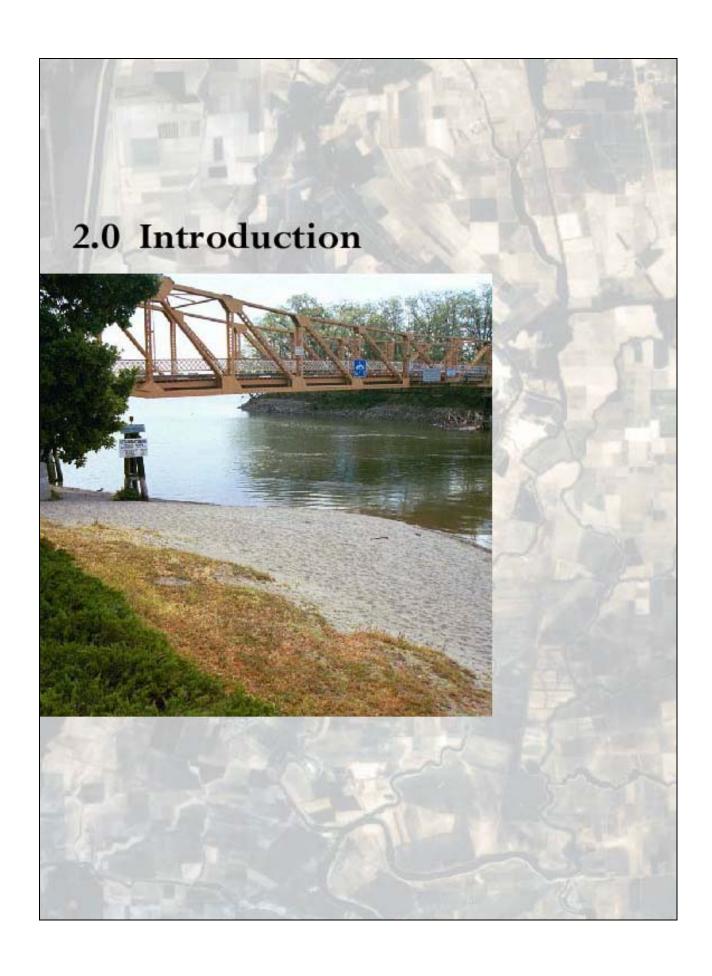
Chapter 6 addresses Delta recreation, projects, needs, and recommends ways to meet future demand with facilities for specific Delta zones. A conceptual strategy is supported with schematic designs for a variety of suggested enhancements.

Chapter 7 addresses implementation, estimates the cost of projects, and summarizes sources for funding and assistance. Recreation in the Delta needs to be led by an entity with a regional overview to guide the required partnerships and to ensure an appropriate level of resources and funds that will fully implement the actions identified in this strategy.

The Delta Recreation Master Strategy incorporates previous work and takes it to the next level, by offering a strategic approach to turn an already popular, dynamic recreation area into one that can address the demand for more recreation opportunities while preserving the core experience and recreation environment that lie in the heart of the Delta.

Figure 1-1





2.0 INTRODUCTION

Summary Points

- The purpose of the Delta Recreation Master Strategy is to develop a guide for decision-making regarding development and use of recreation facilities over the next fifteen years.
- This document serves as a practical guide for affected jurisdictions as they plan for recreation throughout the region.
- The Delta Recreation Master Strategy seeks to establish recreation in an appropriate position alongside other interests and concerns, for recreation is an integral part of the Delta, it complements the Delta's natural setting, and it contributes to the economic viability of the region.
- Delta recreation is largely water-dependent or water-enhanced and it presents an attractive, enjoyable, and popular freshwater setting. Recreational facilities and opportunities are widely dispersed throughout the Delta, but tend to be found in select advantageous locations.
- This study will examine the many zones of the Delta in terms of their physical features and facilities, as well as current and possible recreation potentials.

Note: This document presents findings and summary information for Phase One of a two-phase planning process for recreation strategies for the Sacramento-San Joaquin Delta, a geographic area of the Sacramento and San Joaquin Rivers. Phase One covers aquatic-related recreation strategies, and Phase Two covers landside or terrestrial recreation strategies.

2.1 Purpose of the Strategy

The overriding purpose of the Delta Recreation Master Strategy is to develop a recreation strategic plan that can help guide and implement decisions regarding development of facilities and types of recreation in the Sacramento-San Joaquin Delta region over the next fifteen years. This strategy characterizes existing aquatic recreation and anticipates future demands. It is written from the position that recreation is an important existing and future presence in the Delta and should be given due consideration alongside other Delta-related planning and development initiatives and actions. The Delta has become an increasingly complex planning environment because of the numerous functions it serves.

What was once a continually changing tidal marsh is now a complex maze of natural and man-made resources providing multiple benefits to California's economy. The challenge the region faces in the 21st century is how to sustain the viability of these resources while demand for them continues to grow.....

California Bay Delta Authority CALFED Program Summary (2005)

This strategy characterizes a framework of elements to help define the entire Delta region. This framework view regards the Delta as unique and complex. From this perspective, the strategy articulates specific recreation-related improvements according to special attributes or synergies within the region. The strategy also characterizes sub-regions within the Delta and identifies specific facility, infrastructure, and functional needs or improvements for those sub-regions.

These identified recreation-related improvements serve both private and public sector interests associated with aquatic recreation in the Delta. Although it is important to differentiate between public and private interest needs, a fundamental premise of this strategy is that an array of improvements can result in multiple benefits for both private and public sectors. The purpose of this strategy is to make recommendations for recreation improvements based on existing Delta natural resources. Many of the suggested improvements will create a stronger foundation for local and regional agencies and interests to build programs and projects that will enhance the potential or draw for recreational purposes.

Finally, this strategy describes the process to accomplish improvements and to operate and maintain improved facilities. The strategy factors in other

jurisdictional planning processes that affect implementation of aquatic recreation in the Delta. The discussion regarding implementation strategies is a key component of this strategy. Implementation addresses a variety of public-to-private collaborations and relationships that can help in both funding and follow-through for the specific recommendations.

This comprehensive planning strategy builds upon existing studies. Structurally, the study and the planning process are divided into two phases covering aquatic-related recreation strategies and landside or terrestrial recreation strategies. In reality, there is a profound physical and functional overlap between the land/terrestrial Delta and the aquatic Delta. These characterizations of the Delta are more fully described in Chapter 4, Existing Conditions Summary. The difference between the Phase One and Phase Two documents therefore will be in the amount of emphasis given to the two primary subjects: aquatic recreation and terrestrial recreation. In Phase One, landside uses and facilities are discussed only in terms of their supportive and subordinate role for aquatic activities. The Phase Two document will address the two primary geographic units and emphasize the landside functions and recreation features.

With the CALFED Record of Decision (ROD, 2000), a number of initiatives are underway to address significant needs and deficits in the Delta, including water supply, agriculture, and the environment. Millions of Californians enjoy recreation within the Delta; it is a substantive need that affects and, in turn, is affected by all other uses in the Delta. But the voices for recreation are sometimes not as outspoken as those for other pressing demands. The Delta Recreation Master Strategy frames recreation within the context of other Delta interests and outlines a practical guide for jurisdictions and decision makers. The strategy establishes recreation in a viable position along side other interests as future planning proceeds. This position is consistent with the CALFED Record of Decision (2000) that identified recreation as a resource in the Delta. The strategy will assist in evaluating, planning, and/or mitigating for recreation uses and facilities by providing quantitative and qualitative descriptions of needed improvements for Delta recreation.

2.2 Strategy Rationale

The Sacramento-San Joaquin Delta is unique and intricate in its geography, environment, political jurisdictions, function, and even culture. The San Francisco Bay/Sacramento-San Joaquin Delta (Bay-Delta) is the largest estuary on the West Coast of North America. Tributaries, sloughs, and islands create a haven for over 750 species of plants and wildlife. The Delta also represents a 750,000-acre landscape of canals, cuts, levees, and islands

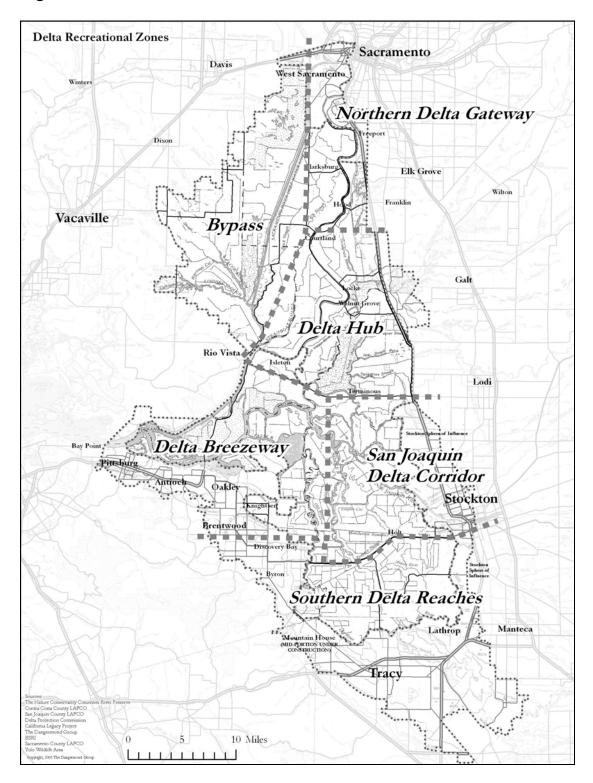
that extends across five counties in the Bay Area and Central Valley. At the heart of the State's two largest surface water delivery projects (the State Water Project and the Central Valley Project), the Delta supplies drinking water for two-thirds of the state's population and irrigation water for over 7 million acres of agricultural land. In addition to these many uses, the Delta also supports a variety of recreational activities resulting in millions of visitor days per year. Although there are multiple regulatory agencies that have authority over various aspects of the Delta, no single agency or organization has comprehensive regulatory oversight in this diverse and complex region. As a consequence, no one agency adequately guides recreation planning for the region, nor enforces recreation policies. As population increases with accompanying demand, the need for more proactive recreation planning, policy, and enforcement grows. This Delta Recreation Master Strategy is one step toward a broader, integrated view of recreation needs, realities, and planning. As a practical tool, the strategy will assist in coordinating and implementing projects and programs.

This study adopts six sub-area designations or zones of the Delta as defined in previous recreation-related studies – notably the California Department of Parks and Recreation's 1997 Sacramento-San Joaquin Delta Recreation Survey and the subsequent Department of Boating and Waterways' 2000 Sacramento – San Joaquin Delta Boating Needs Assessment. Prior geographic sorting of recreation-related information provides useful baseline conditions and needs assessments at a sub-regional level.

Previous studies rely on geography to name the zones. This study renames the zones to capture intrinsic features and to convey sub-regional characteristics, as shown in **Table 2-1**. Names that suggest unique characteristics or special function will help reinforce a unique identity and image for the Delta, a strategy described in Chapter 7.0 The Implementation Strategy.

Table 2-1			
New Delta Zone Names			
Prior Delta Zone Name	Delta Name Used for this Study		
North Delta Recreation Zone	Northern Delta Gateway		
Northwest Delta Recreation Zone	Bypass		
Central Delta Recreation Zone	Delta Hub		
West Delta Recreation Zone	Delta Breezeway		
East Delta Recreation Zone	San Joaquin Delta Corridor		
South Delta Recreation Zone	Southern Delta Reaches		

Figure 2-1

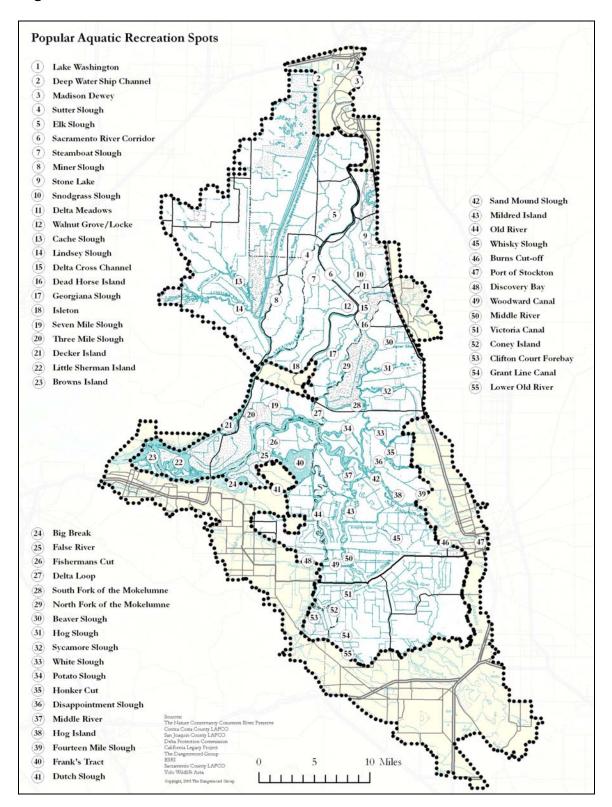


Recreation in the Delta

The Delta is a magnet for a variety of public recreation uses, especially freshwater recreation. Unlike other freshwater recreation venues such as reservoirs, the Delta provides consistent water levels throughout the year and through dry and wet years, resulting in a dependable water-oriented resource. The region offers diverse settings, water depths, microclimates, and unique physical resources, thereby attracting a wide variety of recreation enthusiasts. Water-dependent (boating, fishing, rafting, and swimming) or water-enhanced (camping, picnicking, hiking, bicycling, hunting, and scenic/wildlife viewing) recreation comprise the majority of these existing recreation activities within the Delta.

Different areas of the Delta provide distinct types of recreational opportunities, depending on geography. Calm straight channels are conducive for water-skiing, while open areas with a strong breeze encourage windsurfing. Thus, although the activities may not have formal organization, they occur in specific localities because of the local environment. In other instances, private businesses, like a marina, may actually dictate where an activity occurs. Recreational facilities and opportunities are widely dispersed throughout the Delta but tend to be clustered in select advantageous locations.

Figure 2-2



Recreation Compatibility with Other Uses and Other Management Objectives

The Delta is an intensively managed 750,000-acre landscape. A majority is managed as highly productive agricultural land. About 64,000 acres are urbanized, and a percentage remains with natural vegetation. Estuarine drainages from the Sacramento and San Joaquin River systems weave through these predominantly agricultural lands, encompassing about 56,000 acres of water area. The Delta and its important natural, agricultural and water resources is a key focal point in the State. Consequently, it has become a key focus of the CALFED Program with 25 participatory state and federal agencies.

The CALFED Program outlines the following priority challenges for the Delta Region:

- Preserving the strong agricultural base.
- Securing the levees.
- Protecting water quality for agricultural and urban water users in and around the Delta.
- Restoring healthy ecosystems to benefit native species.
- Protecting and increasing recreational opportunities for growing cities in the Delta region, and throughout the State.

Recreation and Economic Viability for the Region

Aquatic recreation contributes to the overall economic viability of the region, with 95 marina facilities and numerous other support facilities both within and surrounding the Delta. As cited in the 1998 Economic Impact of Recreational Boating and Fishing in the Delta, boating and fishing recreation accounted for over \$378 million in annual expenditures. Recreation provides a public benefit with a variety of activities and is an integral part of the overall Delta economy.

Recreation Compatibility with Environmental Objectives

The Delta provides an attractive setting for recreation. This recreation strategy recognizes that recreation depends on the condition of the resources and that the resources may be impacted by recreation activities and facilities. Recreation as a Delta resource includes the general character of the place, the functions of a dynamic environment for hydrological and ecological processes, and the condition of the water. Recreation concepts are based on the best use of the existing resource in terms of its recreation potential.

2.3 Strategy Process

This strategic planning document builds upon and updates previous studies of aquatic recreation that inventory and assess recreation need in the Delta. This strategy identifies current and future needs for specific facilities, attractions, and infrastructure, estimates costs, and outlines funding options for those improvements and enhancements. Funding, development, and maintenance is discussed within the context of the complex relationships between Delta resources, recreation interests, and other Delta stakeholder entities.

2.4 Content Overview

Chapter 3 provides an overview of the planning approach adopted to create this strategy. This document builds upon a variety of existing data, research, and prior studies and describes in detail the relationships between Delta resources and stakeholder entities.

Chapter 4 presents a review of the Delta within existing conditions, including:

- The physical and jurisdictional characteristics that intermesh within the Delta.
- Delta Zones, the subregions defined by the Department of Parks and Recreation (DPR) that help planners and recreationists conceptualize the region,
- Aquatic recreation resources within the Delta,
- Aquatic recreation facilities by Zone,
- Aquatic recreation elements of the surrounding jurisdictions,
- A patchwork guilt of public and private lands.
- Regulations regarding boater safety, and
- Constraints and issues.

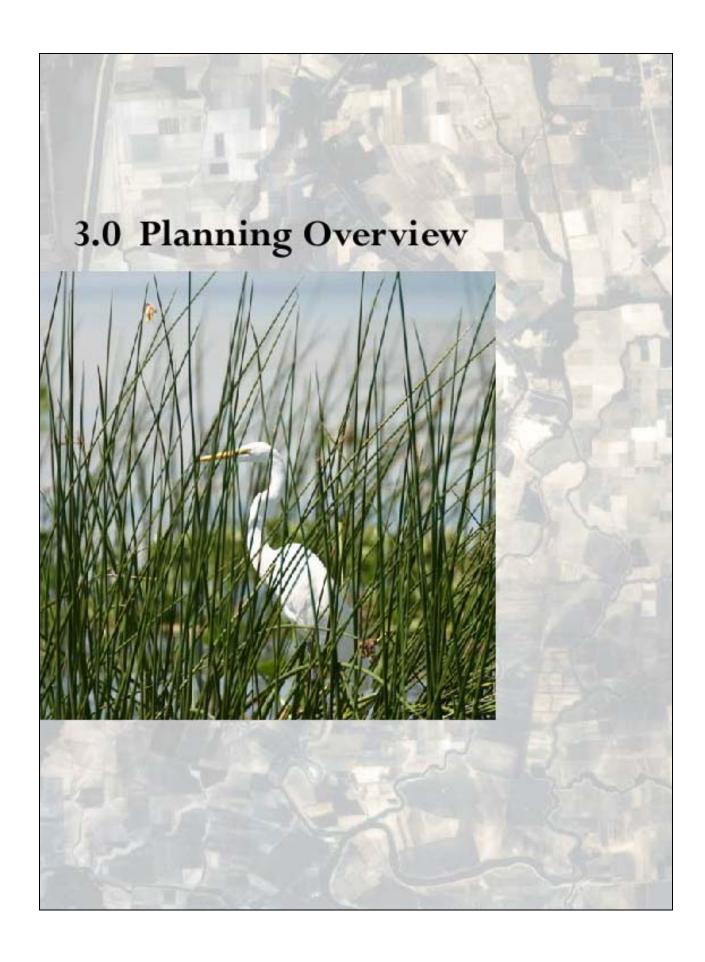
Chapter 5 documents a Delta aquatic recreation needs assessment based on current use and anticipated future demands. The assessment looks at existing recreation deficits and demand projections as well as maintenance needs and deferred maintenance. It then breaks out specific needs by Delta Zone, along with facility/infrastructure needs.

Chapter 6 presents the physical strategy. Needs are translated into recommendations and criteria for recommendations. The document shows how the recreation strategy fits into CALFED's recreation improvement obligations and the California Department of Parks and Recreation Central

Valley Vision. The strategy outlines recreation facility needs throughout the region, and then makes specific recommendations by Delta Zone.

Chapter 7 outlines implementation recommendations for jurisdictions and public/private interests. It looks at funding strategies, and gives some site-specific models for consideration.

Because of the complexity of the Delta, there are many topics that cannot be covered in depth. Boaters who visit the Delta often find themselves on interesting side trips, exploring wineries, restaurants, and small towns, or sloughs, beaches, and shady marinas. This document mirrors that experience by presenting a series of sidebars (accented text) to deepen the reader's understanding of Delta features and issues and to point the reader to additional information.



3.0 PLANNING OVERVIEW

Summary Points

- This effort focuses on strategic relationships between Delta resources, recreation interests, and other Delta stakeholders.
- Data and research are derived from existing studies on aquatic recreation in the Delta. Updates and refinement of prior study information are provided.

A substantial volume of existing studies, specifically on aquatic recreation in the Delta, provided the data and research for this strategic planning document. This document builds upon those prior studies and updates information in order to focus on strategic relationships between Delta resources, recreation interests, and other Delta stakeholder entities within the framework of a master strategy context.

To develop and evaluate an aquatic recreation strategy for the Delta, the strategy process:

- Utilizes geographic information systems (GIS) for strategy analyses and depiction,
- Incorporates Recreation Citizens Advisory Committee (RCAC) and Delta Protection Commission (DPC) staff feedback on strategy concepts (in lieu of a broader outreach strategy component),
- Identifies the updated status of the CALFED initiatives.
- Develops a pragmatic foundation for specific recreation facility siting proposals and recommendations,
- Disseminates strategy information via a Website, and uses that technology as a forum for public comment, and
- Assesses alternatives in the form of geographic priorities and funding/stakeholder clustering.

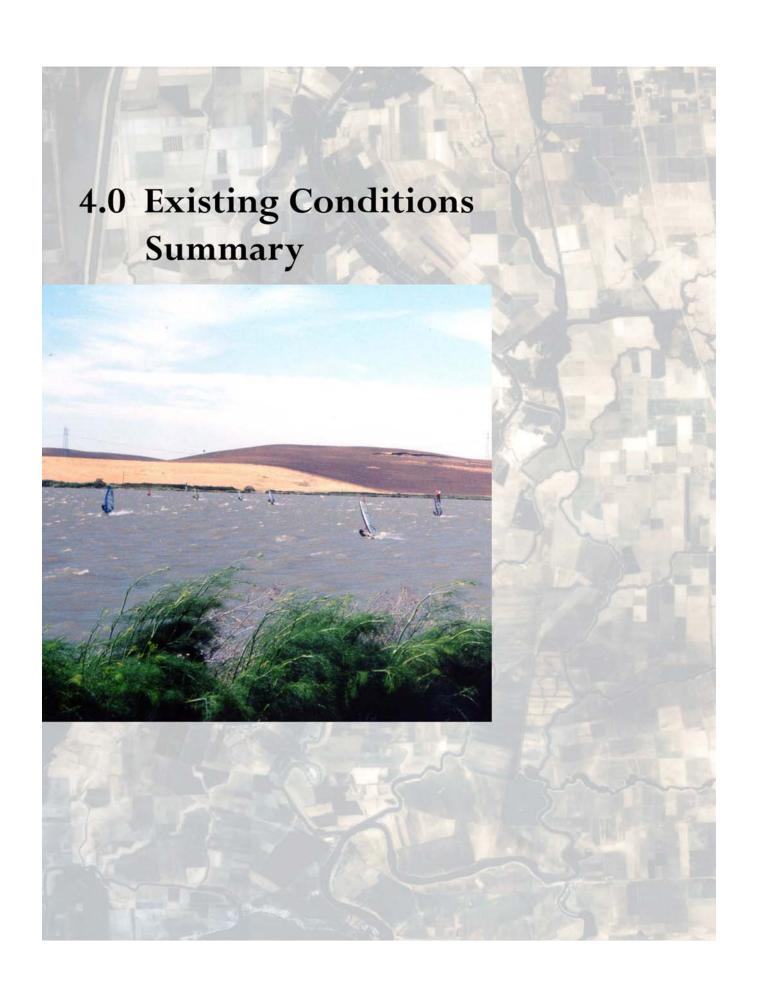
3.1 Building on Previous Studies

The strategy is based on many studies dating from 1963 through 2004. For additional information, see the list of references in **Appendix 3-1**.

In 1997, the California Department of Parks and Recreation (DPR) conducted recreation user surveys for the Delta Protection Commission and the Department of Boating and Waterways, assessed Department of Motor Vehicles boating registration data and Department of Fish and Game Angler

registration forms, and inventoried existing facilities for the entire Delta region. In this study, the Department of Parks and Recreation established six Delta zones to provide more geographically specific summaries for developed data. The Recreation Survey subsequently provided the basis for the Department of Boating and Waterways study, the Sacramento-San Joaquin Boating Delta Needs Assessment 2000 – 2020. This needs assessment study included boating user surveys, an inventory of boating facilities, a survey of facility operators, and estimates of deferred maintenance and demand projections in five year increments to the year 2020. The study described needed boating facilities, attractions, and infrastructure throughout the Delta using the same zone areas defined in the DPR study.

As a logical next step, this strategic planning study presents a concept for the distribution of needed facilities, attractions, and infrastructure for boating recreation. It then lays out a series of strategies to fund, implement, and subsequently operate and maintain these improvements.



4.0 EXISTING CONDITIONS SUMMARY

Summary Points

- The Delta consists of public and private holdings that are physically and politically entwined, creating a dense weave of ownership, interests, and uses. The majority of Delta land is owned by private interests and is in active agriculture. Acquisition should take this ownership pattern and other surrounding land use into consideration.
- Delta lands and resources are managed by numerous agencies and departments at all levels of government, each with different roles and responsibilities, and some with multiple and complex roles and authority over permitting, planning, water supply management, flood protection, boater safety, and resource protection. Partly because of this complexity, funding is available to acquire land and to develop recreation facilities through several different public agencies.
- The Delta's size, complexity, and geographic diversity present a recreation opportunity vastly different from other freshwater sites.
- In addition, the Delta's six geographic zones are distinct in character, offering a diversity of settings, water depths, microclimates, and physical resources. Consequently recreation use and offerings vary greatly from one zone to the next. Some zones are intensely used for recreation.
- The majority of lands in the Delta lies in the unincorporated areas of five counties. Delta lands under county jurisdiction are generally designated for agricultural use with policies that focus primarily on resource protection, flood control, and agricultural land preservation. County policies promote the protection of the Delta's recreational values.
- Municipal policies promote mixed-use activity centers along the waterfront to attract retail, residential, office, restaurant, marinas, and boat launching facilities. Municipalities offer multi-modal public access to the water and maintain public views of the water. Cities adjoining the Delta operate a range of recreational facilities at the neighborhood, area, and citywide scales.
- The dominant recreational use in the Delta is boating, and the area attracts a wide variety of boaters. Resource and facility needs and the range of activities differ between larger and smaller boats.
- Because of its diverse uses and geography, the Delta presents boating safety concerns for recreational boaters. These issues include a high number of boaters on Delta waterways, conflicts between uses, serpentine waterways, limited patrols, navigational hazards, and a variety of natural impediments such as weed-congested channels and submerged debris. Siltation is an ongoing process and therefore dredging is a significant and ongoing need.
- The Delta is a very difficult area to manage for law enforcement, which is hampered by understaffing and underfunding. This situation creates

- additional hazards for recreationists. In addition, no jurisdiction or agency is tasked with removal of hazardous debris.
- Aquatic recreation is an incidental use in the context of the area's massive, interconnecting water delivery system. Yet water recreation is dependent on the proper functioning of the system. When interviewed, boaters said that water quality was the number one issue regarding negative associations with the Delta (fear of health problems associated with swimming, swallowing water, etc.).

4.1 Strategy Context

Public agency roles and responsibilities in relation to aquatic recreation in the Delta can be grouped into four main categories:

- 1) Land Management/Stewardship,
- 2) Process/Program and Project Management,
- 3) Regulatory, and
- 4) Funding/Acquisition.

The agencies and their roles in these categories are described in detail in the next sections. Many agencies have multiple roles; their responsibilities are described separately in each category.

Land Management/Stewardship

California Department of Fish and Game (DFG)

DFG's mandate is to protect and manage wildlife and wildlife habitat throughout the State of California. DFG's Central Valley Bay-Delta Branch gathers and provides information and recommendations which permit other state and federal agencies to develop procedures, policies, and regulations to protect the flora and fauna of the region from harm and enhance the survival of listed species.

DFG owns several large pieces of wildlife habitat in the Delta, including: Woodbridge Ecological Reserve (352 acres), Lower Sherman Island Wildlife Area (3,100 acres), Calhoun Cut Ecological Reserve (967 acres), Yolo Bypass Wildlife Area (15,830 acres), and Webb Tract Berms and Islands (285 acres). DFG also owns several small islands and fishing access sites (e.g., Westgate Landing, Brannan Island, Cliff House, Georgiana Slough, Hogback Island, and Clarksburg Boat Launch), which are managed by the local counties.

The Nature Conservancy (TNC)

The Nature Conservancy, a non-government entity involved in land conservation worldwide, has focused on the lower floodplain of the Cosumnes River in the Sacramento and San Joaquin Delta vicinity. The Cosumnes River, the last remaining undammed river on the western slope of the Sierra Nevada, becomes a broad floodplain as it reaches the periphery of the Delta and harbors rare valley oak riparian forest and freshwater wetlands. TNC property holdings include the Cosumnes River Preserve, McCormack-Williamson Tract, and Staten Island.

East Bay Regional Parks District (EBRPD)

East Bay Regional Parks District maintains several sites and facilities within the Legal Delta including the undeveloped natural area of Brown Island, the Big Break Shoreline Regional Trail, and the Orwood Tract property.

The Wildlife Conservation Board (WCB)

WCB is the entity that performs all land acquisitions for the Department of Fish and Game. Additional functions include habitat restoration and development of wildlife-oriented public access facilities.

California Department of Parks and Recreation (DPR)

DPR purchases and develops property of statewide value for recreation activities. DPR has had a presence in the Delta since 1954 when it developed Brannan Island State Park. As of 2001, DPR held title to the following Delta lands:

- Franks Tract State Recreation Area (3,542 acres), a flooded island in Contra Costa County, used for boating, fishing, and hunting;
- Brannan Island State Recreation Area (225 acres), a developed park facility at the southern tip of Sacramento County that provides boating, camping, swimming, wind-surfing, and other recreation opportunities;
- Delta Meadows River Park (200+ acres), an unimproved, lushly vegetated waterway and old railroad right-of-way near Locke in Sacramento County;
- Stone Lakes Refuge (1000 acres), a wildlife refuge managed by the U.S. Fish and Wildlife Service; and
- Railroad Right-of-Way from Old Sacramento to Hood, a potential link from the State Railroad Museum to other State resources.

DPR recently introduced a "Central Valley Vision" to better serve the needs of Central Valley residents and visitors. The report recommends:

- Expanding recreational facilities with a focus on river corridors, reservoirs, and the Delta to meet the camping, day use, fishing, boating, and trail needs of a diverse population;
- Expanding parklands along watersheds such as the Sacramento, Tuolumne, Stanislaus, San Joaquin, and Merced Rivers;
- · Preserving and protecting vanishing natural resources; and
- Preserving and interpreting the Valley's history (including agricultural history).

United States Fish and Wildlife Service

The U.S. Fish and Wildlife Service (USFWS) is a bureau within the Department of the Interior. Its mission is to work with others to conserve, protect, and enhance fish, wildlife, plants and their habitats for the benefit of the American people.

Among its key functions, the USFWS enforces Federal wildlife laws, protects endangered species, manages migratory birds, restores nationally significant fisheries, conserves and restores wildlife habitat such as wetlands, and helps foreign governments with international conservation efforts. It also oversees the Federal Aid program that distributes hundreds of millions of dollars in excise taxes on fishing and hunting equipment to state fish and wildlife agencies.

In 1994, the USFWS established Stone Lakes National Wildlife Refuge adjacent to Interstate 5 in Elk Grove. The property lies within the Pacific Flyway and provides wintering grounds for a variety of waterfowl and other migratory birds, as well as habitat for native species such as the listed Swainsons hawk. The management focus of the refuge is wetland and riparian habitat restoration and maintenance. Public access to the refuge is limited to self-guided hikes two days a month, plus occasional events by special arrangement.

The USFWS is conducting a Comprehensive Conservation Plan (CCP) for Stone Lakes National Wildlife Refuge as a means of determining an optimum balance between resource protection and public use. The Stone Lakes National Wildlife Refuge is situated within the Morrison Creek, Cosumnes River, and Mokelumne River watersheds, and the Sacramento-San Joaquin River Delta.

In 1999, the USFWS purchased Liberty Island (4,760 acres) and slated the land for inclusion in a proposed North Delta National Wildlife Refuge. The project is currently on hold due to delays in adopting a boundary for the refuge.

Department of Water Resources

The Department of Water Resources (DWR) was created by the California Legislature in 1956 to plan and guide the development and management of the State's water resources. The DWR owns and manages the State Water Project which provides drinking water for two-thirds of the State's population, and the Central Valley Project which supplies irrigation water for thousands of acres of agricultural lands in the Central Valley. DWR manages the water for recreational uses and fish and wildlife protection and works to protect and restore the Delta by controlling salinity, ensuring fresh water supply, as well as by planning long-term solutions for environmental and water use problems. DWR provides dam safety and flood control services and is responsible for the operation and maintenance of a number of levees, dams, and reservoirs in the Central Valley.

DWR owns several tracts of land in the Delta that are important to recreation: the Clifton Court Forebay and surrounding lands (3,660 acres), Twitchell Island (2,965 acres), Sherman Island (8,146 acres), and the North Bay Aqueduct (40 acres). DWR owns another 472 acres of ponds and lands in Sacramento and San Joaquin counties that are leased for farming and recreation. Some of these lands are managed by DFG as part of the White Slough Wildlife Area. Aquatic recreation activities, including boating, fishing, swimming, waterskiing, and water-related activities including picnicking, hiking, and photography, are operated on DWR lands. The recreational facilities at these locations are operated by State and private leases. These lands were acquired as alignment for a proposed peripheral canal.

Cities/Counties

Cities and counties own small amounts of land in the Delta that are used for recreation. Some of these include San Joaquin County's Westgate Landing, as well as various boat launching and water-access sites. All local jurisdictions with land in the Primary Zone of the Delta are required to incorporate the policies of the Land Use and Resource Management Plan for the Primary Zone of the Delta (DPC 1995) into their General Plans and Zoning Codes.

Program and Project Management

California Bay-Delta Authority/CALFED (CBDA/CALFED)

CBDA oversees the implementation of the CALFED Bay-Delta Program for the 25 State and Federal agencies working cooperatively to improve the Delta. The mission of the CALFED Bay-Delta Program is to develop and implement a long-term comprehensive plan to restore ecological health and improve water management in the Delta. To accomplish this goal, CALFED

programs focus on water supply, ecosystem restoration, levee rehabilitation, water storage, and water conveyance. The CBDA is responsible for providing project accountability, implementation, progress tracking, and assessment of the programs.

CALFED has funded hundreds of projects in the Delta, including ecosystem restoration projects such as fish screen research and installation, habitat restoration projects, and water quality and watershed improvements. CALFED grants fund local groundwater recharge, water conservation, and water reclamation projects. Additionally, CALFED has established an Environmental Water Account to ensure the availability of water for environmental purposes without reducing allocations to agricultural and urban users.

U.S. Army Corps of Engineers (Corps)

Flooding can have a devastating effect on Delta lands, facilities, residents, and economy. The Corps is the Federal agency responsible for the design and construction of major flood control projects affecting the region. The Federal government provides between 50 and 75 percent of Corps project costs. The Corps provides general oversight of the operation and maintenance of completed projects, as well as emergency flood fight response during a declared disaster if requested by the State. The Corps also provides emergency repairs to damaged facilities.

The Corps designed and constructed many of the Federal levees and other flood control works in the Sacramento River Flood Control Project to protect low-lying areas of the Sacramento Valley and Delta. The project is operated and maintained under DWR. Also, the Sacramento River Bank Protection Project (SRBPP) provides authority to the Corps for ongoing protection of flood control project components.

California State Reclamation Board (Reclamation Board)

The Reclamation Board also works to control flooding along the Sacramento and San Joaquin Rivers and their tributaries. The Reclamation Board works in cooperation with the U.S. Army Corps of Engineers and with agencies of federal, state, and local governments to establish, plan, construct, operate, and maintain flood control systems.

The Reclamation Board oversees flood control activities in the Central Valley. It serves as the local sponsor to the Corps on Federal flood control projects. The Reclamation Board holds fee title or easements to underlying project lands and inspects the operation and maintenance of facilities. Additionally, the Reclamation Board has regulatory authority over any proposed activities on "project" levees primarily along the Sacramento and San Joaquin Rivers.

Bureau of Reclamation (Bureau)

Established in 1902 within the U.S. Department of the Interior, the Bureau is best known for the dams, power plants, and canals it constructed in seventeen western states. The mission of the Bureau is to manage, develop, and protect water and related resources in an environmentally and economically sound manner in the interest of the American public. The Bureau operates the Central Valley Project's network of dams, reservoirs, and canals. It has started to renew long-term water contracts with farmers, allowing them to control 70 percent of the water.

The Bureau's Delta Division provides for the transport of water through the central portion of the Central Valley, including the Delta. The main facilities are the Delta Cross Channel, Contra Costa Canal, Tracy Pumping Plant, and Delta-Mendota Canal. At the Contra Loma Reservoir, the Bureau provides water-related recreation opportunities such as boating, camping, fishing, picnicking, and water sports.

In 1995, the Bureau purchased the northeastern portion of Prospect Island near West Sacramento. The Port of Sacramento owns a parcel to the south, with a small area at the southeast tip owned by the Department of Fish and Game. The Corps and DWR proposed a joint project to restore the Bureau's lands to tidal, aquatic habitat, but the Bureau is now looking to divest itself of the property due to unexpected project cost increases, so the project is currently on hold.

Sacramento Area Flood Control Agency (SAFCA)

SAFCA was formed in 1989 to address the region's vulnerability to catastrophic flooding. The agency's mission is to provide a plan for 100-year level of flood protection as quickly as possible while seeking a 200-year or greater level of protection over time. Under the SAFCA Act of 1990, the California Legislature granted the agency authority to finance flood control projects and to direct flood control activities in ways that provide optimum protection to the natural environment.

California Department of Transportation (Caltrans)

Caltrans designs, constructs, maintains, and operates the California State Highway System, as well as that portion of the Interstate Highway System within the state's boundaries. Caltrans maintains the primary access roads into the Delta including State Route 4, State Route 12, State Route 160 (River Road), and the portions of I-80 and I-5 that transect the Delta. Most of State Route 160 is located within easements owned by Reclamation Districts. Rights-of-way were purchased for a widening project south of Rio Vista. Caltrans owns 480 acres of land between I-80 and the railroad right-of-way at

the north end of the Yolo Bypass, which is proposed to be enhanced for wildlife habitat.

Regulatory - State

Delta Protection Commission (DPC)

DPC is a State agency, created under the Delta Protection Act of 1992. The Commission has appeal authority over local government actions in the Primary Zone of the Delta. The Commission's jurisdiction includes portions of the five Delta counties -- Solano, Yolo, Sacramento, San Joaquin, and Contra Costa -- and is referred to as the Primary Zone of the Delta. The Primary Zone is a portion of the Legal Delta as defined in Section 12220 of the Water Code. The seats on the Commission are defined in the legislation and include designees from the Department of Parks and Recreation, the State Lands Commission, the Department of Water Resources, the Department of Boating and Waterways, the Department of Fish and Game, and the Department of Food and Agriculture. Additionally, one supervisor from each of the five counties in the Delta, three city representatives, and five reclamation district representatives hold positions on the Commission.

California Department of Fish and Game (DFG)

The Department of Fish and Game is required to implement the California Endangered Species Act. The Act protects listed plants, fish, and wildlife and creates a permit process through DFG for projects that may result in "take" of listed species — not only endangered and threatened species, but also species DFG identifies as "candidates" for listing. DFG interprets the take prohibition to include the destruction of nesting and foraging habitat necessary to maintain species reproduction. Fish and Game also requires a Streambed Alteration Agreement (SAA) for projects that divert or obstruct the natural flow of water, change the bed, channel, or bank of any stream, or propose to use any material from a streambed.

State Water Resources Control Board/Regional Water Quality Control Board (State Board/Regional Board)

The DWR has no regulatory powers and defers to the State Water Resources Control Board for water rights and quality issues. The California Legislature established the State Board and nine Regional Boards in 1967. The State Board administers the state's water quality, water pollution control, and water rights functions as part of the California Environmental Protection Agency. The State Board provides policy guidance and budgetary authority to the Regional Boards, which conduct planning, permitting, and enforcement activities principally to protect surface and ground waters in their jurisdiction. The Regional Boards issue permits for storm water discharges associated with any construction activity that result in the disturbance of at

least five acres of land area. Disturbance construction activities include clearing, grading, excavation, and reconstruction.

California State Lands Commission (SLC)

The State of California owns nearly 4 million acres of land underlying the navigable and tidal waterways. Known as "Sovereign Lands," these lands include the beds of rivers, streams, and sloughs; non-tidal navigable lakes; tidal navigable bays and lagoons; and tide and submerged lands adjacent to the coast and offshore islands from the mean high tide line to three nautical miles offshore. The SLC has jurisdiction over all tidelands and submerged lands. These ownerships must be used for purposes consistent with the public trust, such as maritime commerce, navigation, fishing, environmental, and recreational purposes. The SLC follows this mandate when considering the use of "Sovereign Lands" under its jurisdiction, and seeks cooperation from agencies with authority over public trust resources. The California constitution mandates public rights of access to the State's waterways. The SLC has secured public access easements to many of these.

SLC staff often prepares Environmental Impact Reports (EIRs) for land use changes within its jurisdiction on projects that affect State lands. SLC also reviews permit applications submitted to the California Coastal Commission, the San Francisco Bay Conservation and Development Commission, and the Corps.

Public and private entities may apply to the SLC for leases or permits for marinas, industrial wharves, and tanker anchorages, or for timber harvests, dredging, grazing, mining, oil and gas, and geothermal development. For example, developers of marinas along the State's navigable rivers, natural lakes, and bays are required by law to lease State land at marina sites. Private landowners who wish to install a recreational pier adjacent to their waterfront residence must likewise obtain a lease. To complete projects in harbors and waterways, the SLC issues dredging permits to both public and private parties. If the dredged material is to be used for a commercial purpose, the SLC charges royalty fees.

Regulatory - Federal

U.S. Army Corps of Engineers (Corps)

The Corps evaluates permit applications for all construction activities that occur in the nation's waters, including wetlands. The regulatory authority for the Corps is based on Section 404 of the Clean Water Act and Section 10 of the River and Harbors Act. Section 404 of the Clean Water Act requires Corps authorization for work involving placement of fill or discharge of dredged materials into any "waters of the United States." Section 10 of the

River and Harbors Act requires Corps authorization for work or structures in or affecting "navigable waters." Corps jurisdiction extends up to the ordinary high water line for non-tidal waters and up to the line of high tide (for dredge or fill) or mean high water line (for work or structures) for tidal waters.

U.S. Fish and Wildlife Service (USFWS)

The USFWS reviews and comments on projects pursuant to the Fish and Wildlife Coordination Act, the Clean Water Act, and the National Environmental Policy Act. The USFWS' comments focus on the effects of projects on all fish and wildlife resources and the habitats that support those resources. The USFWS also reviews projects for their effects pursuant to the Federal Endangered Species Act, which is intended to conserve the ecosystems that threatened and endangered species depend on for survival. The program employs a strict permitting procedure for all development that may result in "take" of a listed species. An amendment to the Endangered Species Act authorizes local governments, developers, and other concerned individuals to develop Habitat Conservation Plans to mitigate for projects that may result in take of listed species.

Funding and Acquisition

California Department of Boating and Waterways (DBW)

DBW endorses boating safety and education, assists local boating law enforcement agencies, ensures uniformity in boating regulations, and licenses boat operators and brokers. DBW is also responsible for reviewing, updating, and adopting State boating regulations to reflect changes in Federal and State boating laws and regulations.

Local government entities may adopt boating regulations for waterways in their areas. These ordinances can pertain only to time-of-day restrictions, speed zones, special-use areas, and sanitation and pollution control. DBW works with local agencies to develop standards for these regulations and may also work with the Federal government to develop and administer laws and regulations as they relate to marine safety and navigation.

In-the-water construction projects can potentially create safety problems that endanger the lives of boaters. DBW, therefore, reviews environmental documents such as Environmental Impact Reports for impacts on boating safety. Through this process, DBW provides recommendations for safety measures that assist in the reduction of fatalities and accidents.

DBW works to ensure that enforcement of California boating laws is uniform throughout the State. DBW provides grants to local governments to fund

boating enforcement activities, equipment purchases, and law enforcement training.

DBW's primary objective is to plan and develop boating facilities in environmentally acceptable areas with priority on the development or expansion of facilities where the greatest need exists. To accomplish this objective, DBW:

- Grants or loans funds to cities, counties, and State or Federal governmental agencies for planning and constructing small craft harbors, and provides loans to small businesses to develop recreational marina facilities.
- Reviews lease documents for concessionaires in compliance with the Harbors and Navigation Code to ensure that State loans can be repaid.
- Plans, designs, finances, and constructs boating facilities throughout the State Park System, at State Water Project reservoirs, and on other State lands.
- Conducts a water hyacinth control program in the Sacramento-San Joaquin Delta, its tributaries, and Suisun Marsh.
- Grants funds, on a cost-sharing basis, to local and Federal governmental agencies to provide beach erosion control measures for the protection of valuable coastal resources.
- Coordinates, plans, and funds boating trail projects and protects the public's right to recreational use of whitewater rivers.
- Provides grants for pumpouts.

Each year DBW provides grants to public entities throughout the state for construction of launch ramps, boarding floats, shore side or floating restrooms, shore protection, vehicle/trailer parking, and other boating-related items. The facilities constructed with DBW grants must be located in environmentally acceptable areas, meet or exceed DBW design criteria, be economically feasible, and remain open to all boaters at reasonable prices. In return for this funding, grant recipients are responsible for operating and maintaining the project for a minimum of 20 years at no additional cost to the state.

DBW also lends money to public and privately-owned marinas. Loan funds are available to public entities for planning, construction, rehabilitation, or expansion of small craft harbors throughout California. Some of the improvements that can be funded by DBW are breakwater construction, dredging, berthing, utilities, landscaping and irrigation, restrooms, fuel docks, boat sewage pumpout stations, and public access walkways at small craft harbors.

DBW provides construction loan funds to private recreational marinas. These funds can be used to construct, expand, or improve privately-owned boating facilities that provide select services to the general public. These construction funds can be used for berthing, restrooms, vessel pumpout stations, utilities, riprap and erosion control, vehicle/trailer parking, launching facilities, dry boat storage facilities, breakwaters, and other boating-related facilities.

Funding for the boating facility projects, with the exception of beach erosion projects, comes from the taxes paid by boaters for the motor fuel used to propel their vessels as well as repayment of principal and interest on outstanding small craft harbor loans.

Wildlife Conservation Board

The Wildlife Conservation Board (WCB) is authorized to acquire interest in real property and water rights through gift, purchase, lease, easement, development rights or credits, and other interests in real property. The acquisition program is administered pursuant to the Wildlife Conservation Board's original enabling legislation, "The Wildlife Conservation Law of 1947" (Fish and Game Section 1300, et seq.). Land acquisition is a component of all WCB programs. WCB acquires real property or rights in real property on behalf of the Department of Fish and Game and can also grant funds to other governmental entities or nonprofit organizations to acquire real property or rights in real property. All acquisitions are made on a "willing seller" basis pursuant to fair market value appraisals as approved by the Department of General Services. Acquisition activities are carried out in conjunction with the DFG.

WCB offers grants under most of its programs. These grants include restoration and enhancement of wildlife habitat, development of public access facilities for wildlife-oriented uses, and protection of habitat through fee acquisitions and conservation easements.

One WCB program, the Public Access Program, provides financial assistance to cities, counties, public districts, and corporations for the development of facilities in collaboration with local agencies. The facilities funded under this program are required to provide public access to hunting, fishing, or other wildlife-oriented recreation as part of projects such as fishing piers, access roads, launch ramps, trails, boardwalks, interpretive facilities, and lake or stream improvements. Support facilities such as restrooms and parking areas are also eligible for funding through this program. The revenues that sustain the Public Access Program come from the Wildlife Restoration Fund which is funded by a portion of the State's income from horse racing. The Wildlife

Restoration Fund is partially augmented by Federal Sport Fish Restoration Act Funds. WCB may also occasionally share in other State and Federal fund sources.

California Department of Parks and Recreation (DPR)

Over the last 38 years, DPR's Office of Grants and Local Services has administered over \$2 billion in local assistance grants. On March 7, 2000, voters passed Proposition 12, the \$2.1 billion "Safe Neighborhood Parks, Clean Water, Clean Air and Coastal Protection Bond Act of 2000" (2000 Bond Act). On March 5, 2002, voters passed Proposition 40, the \$2.6 billion "California Clean Water, Clean Air, Safe Neighborhood Parks, and Coastal Protection Act of 2002" (2002 Resources Bond) that provides \$870 million for local assistance grants.

DPR administers several other grant programs including the Federal Land and Water Conservation Fund, Habitat Conservation Fund, and the Recreational Trails Program. The Land and Water Conservation Fund provides funds to federal agencies, and to the 50 states and six territories.

The Habitat Conservation Fund provides funds to local governments under the California Wildlife Protection Act of 1990. Cities, counties, and districts are eligible to apply for \$2 million available under the program between July 1, 1990 and July 1, 2020. The Habitat Conservation Fund program requires a dollar-for-dollar match from a local non-state source. In the 2006/2007 grant cycle eligible projects include acquisition of deer and lion habitat, rare and endangered species habitat, wildlife corridors and trails, wetlands, and salmonids, trout and riparian habitat. Additional funding is available for the enhancement and restoration of wetlands, aquatic habitat for salmonids and trout resources and riparian habitat as well as for programs that provide for the interpretation of State park and wildlife resources and programs that bring urban residents into park and wildlife areas.

Pace of Change

The marina upgrade appeared to be a win-win proposal that would result in additional wet and dry storage for close-in access to both the Bay and the Delta waterways. There were no obvious environmental issues, and the State Department of Boating and Waterways offered grants and loans.

Ideally, this process would be completed in 12 months so that during the winter season of the following year, construction could proceed and the revitalized marina would be ready for the traditional Memorial Day Weekend opening of the boating season.

When the season closed after Labor Day, the marina operator hired an engineer to draw the final designs and obtain permits. These were completed by October. The County agreed to be the lead agency for the permit process. To save time, simultaneous applications were made and presented to federal, state, and other local agencies. All the agencies with a say in the process had responded and posted public comment times by the Fourth of July.

The federal fisheries approved a window for the waterside construction, but that wasn't consistent with the state fisheries time frame, so conferences were arranged and agreements worked out. After 18 months had passed, the State Lands Commission required the marina owner to sign a new lease, and then the Reclamation Board decided now would be as good a time as any to strengthen the existing levee that the marina was built on.

The marina operator balked at doubling (or tripling) the cost of the project and was ready to stop the process. The Reclamation Board relented and settled for some additional scour protection on the face of the levee. But by now, over two years had passed and a new county administration was in place with a new priority for development. The economy had slid since the process began, discretionary spending was smaller, and boating activity declined.

The project was shelved, after significant cost to the marina operator and investment of time by all the agencies involved.

Although the old marina still operates, Delta recreation was not enhanced by additional boat storage, docks, or site enhancements.

4.2 The Delta Zones

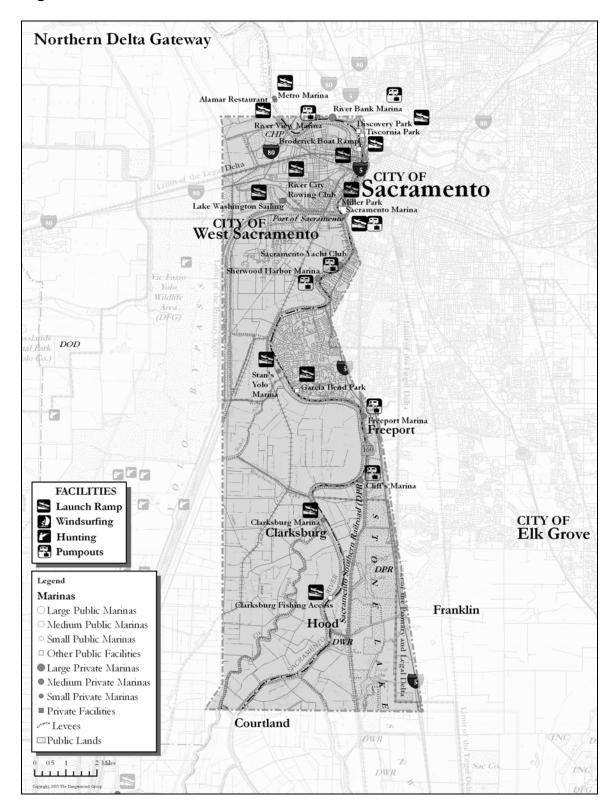
The Delta can be broken down into six distinct zones. The following section details the physical area, water surface area, waterways, numbers of marinas, and numbers of boating slips in each zone. A high degree of variability exists among the different zones in both the amount of contiguous water surface area and in the number of aquatic recreation facilities. Of approximately 57,576 acres of navigable waterways in the Delta, approximately five percent are in the Northern Delta Gateway zone, twelve percent in the Bypass zone, ten percent in the Delta Hub, 51 percentage in the Delta Breezeway, twelve percent in the San Joaquin Delta Corridor, and 10 percent in the Southern Delta Reaches.

The Northern Delta Gateway (North Zone)

The Northern Delta Gateway, at the north end of the Delta, includes the Sacramento River corridor from the City of Sacramento to the community of Courtland. The area also includes portions of Elk Slough and the northern segment of the Sacramento Deep Water Ship Channel. The Ship Channel is permanently separated from the Sacramento River by Stone Locke (non-operational). An estimated 2,617 acres of contiguous water surface provides approximately 61 linear miles of navigable channels – the majority of these miles are in the Sacramento River corridor. In this zone, eight marinas provide a total of 988 boat slips.

Special features of the Northern Delta Gateway zone include the upstream passage to such resources as Discovery Park (a Sacramento County regional water-oriented park), frontage along Old Town Sacramento, urbanized development along the east and west sides of the River, the terminus to the Sacramento Deepwater Ship Channel, and the Stone Lakes Wildlife Area. Much of the levee system along the Sacramento River and Elk Slough has "naturalized," with stands of cottonwood, alder, valley oak, box elder, and willow providing a scenic edge for water-based views. This zone could be considered the Gateway to the Delta from Sacramento and West Sacramento. The Sacramento River is an intensively used artery that links the lower Delta with the Old Sacramento area and navigable waters upstream on the American and Sacramento Rivers. As a typical water corridor, this one lends itself to a variety of aquatic recreation activities including cruising to specific landside destinations such as Old Town Sacramento, fishing, and, in sheltered segments, water-skiing and personal watercraft use. The Deep Water Ship Channel is used for rowing and other calm water activities by groups such as the River City Rowing Club. See **Figure 4.1**.

Figure 4-1

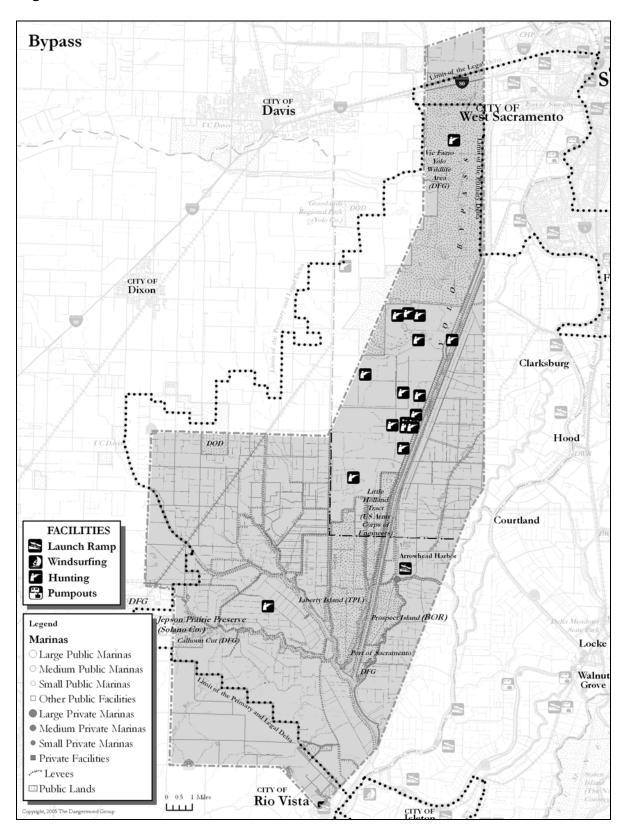


The Bypass (Northwest Zone)

The Bypass includes the Yolo Bypass, Cache Slough, and portions of the Sacramento Deep Water Ship Channel. The estimated 7,190 acres of water surface in this zone includes approximately 58 linear miles of navigable channels. The largest single block of these navigable miles is along the Ship Channel. In the Bypass, one marina facility provides 76 boat slips.

The Bypass structure, notable for its primary function as a peak-flow floodway for the Sacramento River, is the dominant feature in this zone. During high-flow periods, floodwaters flow directly into the lower Delta and out to the San Francisco Bay. The floodway, however, is not used for boating activities. The zone has extensive natural and restored habitat areas. including segments of Cache Slough, Jepson Prairie, portions of Liberty and Prospect Islands, and the Vic Fazio Yolo Basin Wildlife Area. Drainages from Putah Creek, Willow Slough, and Haas Slough support additional natural habitat areas. The Bypass has relatively limited navigable waterways with minimal boating-related facilities; however, the bypass is not safe for boating. Liberty Island has flooded and is now used seasonally for fishing and hunting from the Delta waters. Little Holland Tract has also partially flooded and is being used informally for recreation with minimal oversight, improvements, and management. The primary recreation uses in the Bypass include waterfowl hunting and wildlife viewing, with some fishing at the southern end. Several recreation-serving facilities primarily serve land-based activities, including duck hunting and wildlife viewing. See Figure 4.2.

Figure 4-2

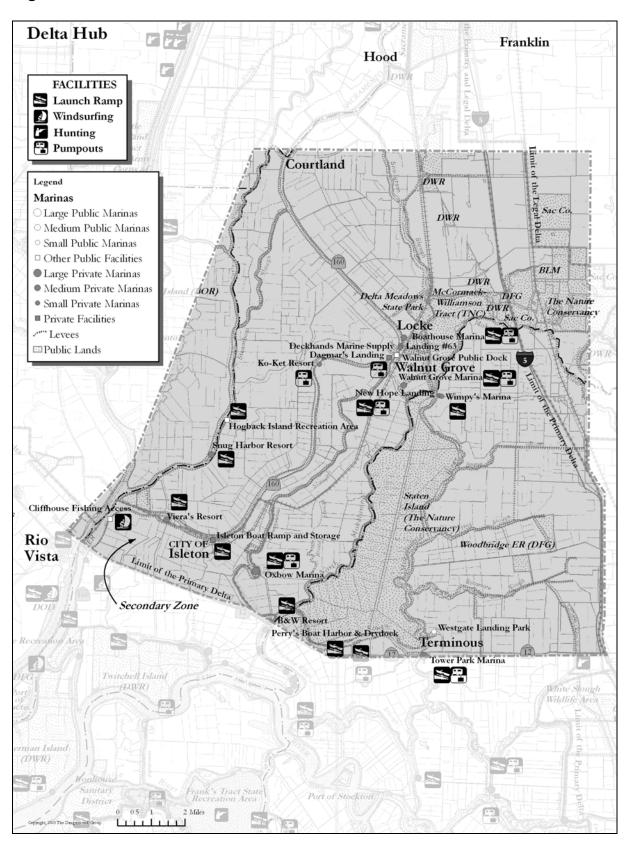


The Delta Hub (Central Zone)

The Delta Hub encompasses the north central portion of the Delta and includes parts of the Sacramento River, Miner's Slough, Steamboat Slough, Sutter Slough, Georgiana Slough, the north and south forks of the Mokelumne River, the Delta Cross Channel, Snodgrass and Lost Sloughs, and Beaver, Hog, and Sycamore Sloughs. The cities of Rio Vista and Isleton and the unincorporated communities of Courtland, Walnut Grove, Locke, and Terminous are found in this zone. The cities of Galt, Woodbridge, and Lodi are located to the east of this region. An estimated 5,552 acres of water surface in this zone include approximately 132 linear miles of navigable channels. The majority of these miles are along the Mokelumne River, the Sacramento River corridor, and Steamboat, Georgiana, and Snodgrass Sloughs. In some instances the waterways form connecting loops providing multi-route options. Twelve marina facilities in the Delta Hub region provide an estimated 1,271 boating slips. Numerous boating-associated facilities include boat-accessed restaurants, resorts, and yacht clubs.

Special features include the Cosumnes River Preserve, the McCormack — Williamson Tract, Staten Island, and the Delta Meadows (a California Department of Parks and Recreation facility) that offer attractive natural areas with designated anchorages. A concentration of historic features, such as the Chinese historic settlement of Locke, the Japanese districts of Walnut Grove, and numerous historic mansions, are located along the Sacramento River. Rio Vista, Isleton, and Walnut Grove have courtesy docks to enable access to the landside visitor-serving facilities. The primary recreation uses in the Delta Hub include boat cruising, fishing, water-skiing, boat camping, and sailing. See **Figure 4.3**.

Figure 4-3



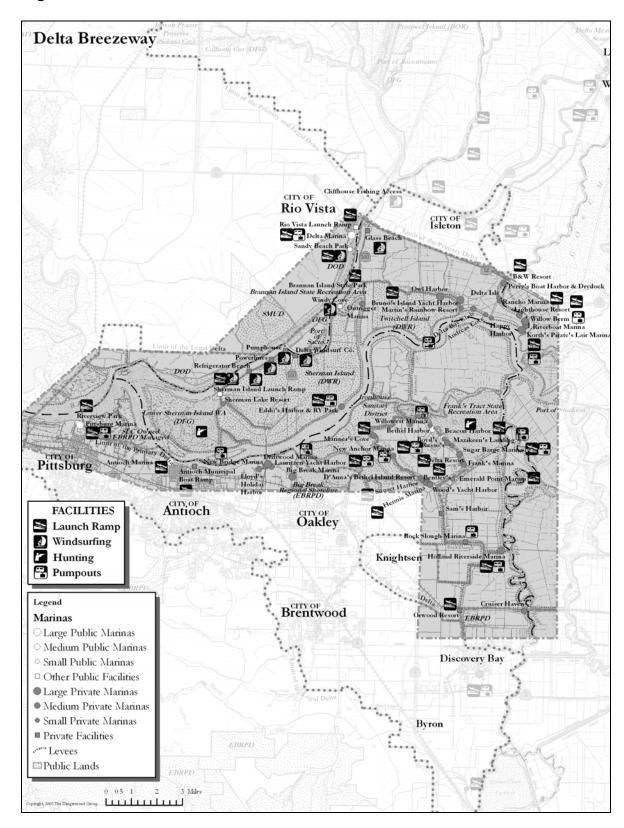
The Delta Breezeway (West Zone)

The Delta Breezeway covers the western limits of the Delta and serves as the gateway to and from the San Pablo and San Francisco Bays to the west. This region also includes the lower Sacramento and San Joaquin Rivers. The channels tend to be broad and deep and contain large proportions of water surface area compared to land surface area toward the western limits. The estimated 29,522 acres of navigable water surface in this zone includes approximately 152 linear miles of navigable channels. To a large extent, these miles occur within the main flows of the Sacramento River, the San Joaquin River, and Old River, plus flooded islands. Waterway connector channels link the large water bodies. The cities of Pittsburg, Antioch, Oakley, Byron, and Brentwood adjoin the zone, while the unincorporated community of Bethel Island is located entirely within the zone. The Breezeway is the most intensive boating area in the Delta with the highest number of facilities and greatest number of recreational boats in its waters, including 56 marina facilities that provide approximately 5,990 boat slips.

A unique feature of the Delta Breezeway is the many inundated islands that have expanded the extent of water area and the range of navigable areas. These inundated islands include Franks Tract, Little Franks Tract, and Lower Sherman Island. The extensive navigable waterways include many channels sufficiently wide and deep for larger boats and sailing vessels.

Although optimum in the summer months, the Delta Breezeway offers unique microclimate conditions that enable some of the best year-round conditions for windsurfing, board sailing, and sailing. These same winds tend to limit the amount of water-skiing and wakeboarding in the area, since participants in these activities typically prefer calm conditions. Because the Delta Breezeway is the primary transition area between the saline Bay waters and the fresh Delta waters, it is known to attract an abundance and diversity of fish, including striped and black bass, sturgeon, salmon, bluegill, and crappie. Other features include State Parks Brannan Island State Recreational Area, Bethel Island (with the single highest concentration of boating-related facilities in the Delta), Lower Sherman Island (a Sacramento County water-access area), and the proposed Big Break Science Center that will host interpretive features developed at the East Bay Regional Park District's Big Break Recreation Area. Like the Delta Hub zone, the levee system in much of the Delta Breezeway has been engineered with stone or rock slope protection, with few areas that appear naturalized. However, the typically broader expanses of water channels with sweeping panoramic views have the effect of reducing the visual impact of these engineered levees. See Figure 4-4.

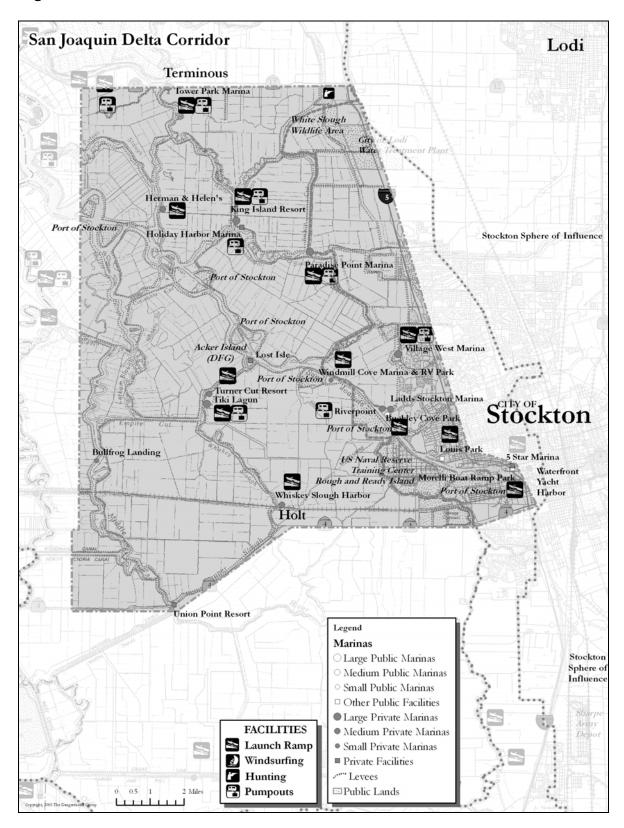
Figure 4-4



The San Joaquin Delta Corridor (East Zone)

The San Joaquin Delta Corridor makes up the southeastern portion of the Delta. The Corridor is bordered by State Route 12 on the north, Interstate 5 on the east. State Route 4 on the south and a north-south line from Route 4 to Route 12 on the west. An estimated 7,560 acres of water surface include approximately 122 linear miles of navigable channels. The largest segments of these navigable miles are found along the main channel of the San Joaquin River and the Middle River. The City of Stockton is the entry point for a significant number of recreation boaters, as well as the economic hub that links agricultural, shipping, and recreation activities in the general vicinity. The Stockton Deep Water Ship Channel traverses this zone from the northwest to the southeast. The Middle River also flows through the San Joaquin Delta Corridor. Besides the main river flows, there are numerous channels and sloughs that define some of the higher-elevation islands, and dead-end sloughs that run easterly along the eastern border of the zone. The San Joaquin Delta Corridor is considered a superior shore-fishing area because of its many accessible connecting and dead-ended sloughs. This area is a favorite for lazy exploration of the Delta waterways. Mildred Island, a submerged island adjoining Middle River, has characteristics similar to Franks Tract, with marginally navigable waters but very good fishing conditions. Thirteen marina facilities offer 2,786 boating slips with a number of private yacht club facilities situated on vegetated islands along the larger channels. See Figure 4-5.

Figure 4-5



The Southern Delta Reaches (South Zone)

The Southern Delta Reaches encompasses the southern extent of the Delta. This area is bordered by Highway 4 to the north, Interstate 5 to the east, the Southern Pacific Railroad easement on the west, and Interstate 205 to the south. An estimated 5,135 navigable acres of water surface include approximately 110 linear miles of navigable channels. The majority of these miles are along the main channel of the San Joaquin River, Middle River, Old River, Victoria Slough, Woodward Slough, and the navigable portions of Discovery Bay. The Clifton Court Forebay, the California Water Project's primary collection reservoir, is located in the Southern Delta Reaches. Discovery Bay, a water-oriented, residential development, is located off of Old River east of the community of Brentwood. Five marina facilities provide approximately 563 boat slips with fewer boating and water-associated facilities compared to the adjoining zones to the north, due to the relatively limited amount of navigable waterways.

Situated on the lee side of the Diablo Range, this portion of the Delta tends to be the most sheltered in terms of wind exposure. The Southern Delta Reaches attract boaters drawn to quieter waters for water-skiing, wake boarding or fishing. Old River, portions of Middle River, and the main San Joaquin channel flow through this zone. Because of the intake facility near Clifton Court Forebay, water flows are heavily managed. Many of the channels are currently impassable due to snags and vegetation encroachment.

The Southern Delta Reaches is also an area absorbing a significant amount of urban expansion. Because of its proximity to Highway 580 and Interstate 5 corridors and its relative proximity to the Bay area, communities within this zone are rapidly expanding. The communities of Tracy and Lathrop are expanding further into the Delta Secondary Zone while the Mountain House development, situated northwest of Tracy, is entirely within the Legal Delta, adjoining and south of the primary zone. See **Figure 4-6**.

Figure 4-6

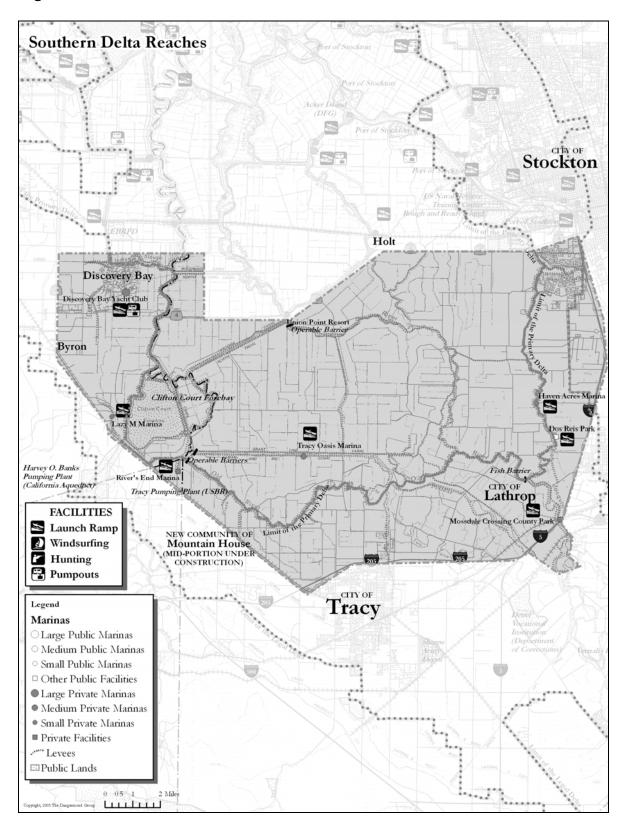


Table 4-1 Summary of Facilities and Resources by Recreation Zone								
	Recreation Zones							
	Northern Delta Gateway (North)	Bypass (Northwest)	Delta Hub (Central)	Delta Breezeway (West)	San Joaquin Delta Corridor (East)	Southern Delta Reaches (South)	Total	
Total Water Surface (acres)	3,145	7,545	5,915	29,995	7,940	5,255	59,79 5	
Contiguous Water Surface (acres)	2,617	7,190	5,552	29,522	7,560	5,135	57,576	
Contiguous Surface Area (sq. miles)	4.1	11.2	8.7	46.1	11.8	8.0	89.9	
Linear Miles of Contiguous Waterways	61	58	132	152	122	110	635	
Number of Marinas	8	1	12	56	13	5	95	
Boat Slips	988	76	1,271	5,990	2,786	563	11,674	

Sources: California Spatial Information Library

The Dangermond Group

Table 4-2 Facilities and Resources by Recreation Zone							
	Recreation Zones						
	"The Northern Delta Gateway" (North)	"The Bypass" (Northwest)	"The Delta Hub" (Central)	"The Delta Breezeway" (West)	"The San Joaquin Delta Corridor" (East)	"The Southern Delta Reaches" (South)	
Water Features	The Northern Delta Gateway, major channels provide water routes upriver to the Cities of Sacramento, West Sacramento and other Delta Zones	The Yolo Bypass Flood structure for the Sacramento River, The Cache & Lindsey Slough Complex, the Sacramento Deepwater Ship Channel, shallow non-navigable channels, extensive tidal margin lands	Many interconnected navigable channels including the Delta Cross-Channel	Gateway to and from San Pablo and San Francisco Bays, many inundated islands	Numerous main river flows, channels, Channel Islands, sloughs, and the city of Stockton	Sheltered & quiet waters, Clifton Court Forebay, regulated water flows, many vegetation and debris congested channels	
Issues	Water safety issues due to the narrow channel configuration of shallow waterways. Clogged sloughs, siltation/dredging, nonoperation of the Sacramento Boat Lock, lack of vegetation along the Sacramento River	Siltation/dredging, aquatic weeds, island inundations at the south end of the Bypass, lack of facilities, potential for further levee failure due to large bodies of standing water at the south end, mercury contamination and West Nile Virus risks because of substantial amounts of shallow water habitat, boating is not allowed during winter flood flows	Siltation/dredging, aquatic weeds, operations of Delta Cross Channel, CALFED Projects that impede existing recreational boating corridors, extensive reduced speed zones	Urban encroachment, aquatic weeds, submerged obstacles, siltation/dredging, user group conflicts, deferred maintenance for many of the boating facilities	Siltation/dredging, submerged obstacles, lack of buoy areas, commercial shipping traffic along the San Joaquin River	South Delta improvement area (CALFED) with potential diversions and channel barriers proposed. Urban encroachment occurring in the Lathrop, Tracy & Mountain House areas, Siltation/dredging & submerged obstacles	
Opportunities	Area includes many historic features in City of Sacramento and West Sacramento. Joint Powers Authority established for habitat, for Riverfront area, potential tourist destination points	Extensive public land ownership, high habitat & wildlife values, numerous waterways and channels accessible to small non-motorized water craft	Multiple routes and water channels including the Mokelumne, Cosumnes, and San Joaquin Rivers; Extensive naturalized channels in the vicinity of Snodgrass Slough, and the Upper Mokelumne River	Largest percentage and extent of navigable waters, numerous boating facilities, highly functional boat launching facility at Brannan Island State Reserve Area	Stockton Gateway area with water oriented development at the Port of Stockton. Numerous unique settings with river islands, Deep water access along the San Joaquin River	Extensive naturalized channels along Old River and adjoining sloughs, many areas sheltered from wind by Diablo Range, warmest temperatures and calmest water conditions, ideal water-ski, wake-boarding areas	
Types of Recreation	Cruising, fishing, channel exploring, riverboat tours, and water-skiing	Land-based hunting and wildlife viewing	Cruising, fishing, water-skiing, camping, sailing	Wind-surfing, sailing, fishing, large boat cruising	Fishing, sailing, cruising	Water-skiing, wake-boarding, fishing	
Unique Characteristics	Extensive urban interface, Raley Field, Discovery Park, Old Sacramento, Stone Lakes National Wildlife Refuge, naturalized levees	Extensive natural and restored habitat areas, unique upper tidal zone vegetation and habitat areas, one of the few areas in the Delta with channels without levees, Jepson Prairie Preserve	Cosumnes River Preserve, Delta Meadows, Locke Historic town, the Delta Cross Channel	High constant winds through the Carquinez Strait, Brannan Island State Recreation Area, Bethel Island, Big Break Recreation Area	Mildred Island (flooded), several yacht clubs, Port of Stockton, river islands, deep channels	Discovery Bay, Clifton Court Forebay, major intakes for water export	

Where Is the Delta?

A Delta resident tells the story of meeting a Russian cosmonaut who asks, "Where are you from?"

The Californian falters. Even his Bay Area friends don't know where he lives. He takes a stab at describing the Delta, knowing the attempt is futile.

"I know this Delta!" the cosmonaut exclaims. He'd seen it from space.

It's possible that only from this perspective can anyone really see the Delta. Despite the fact that it is the largest delta on the west coast of North America, it has a remarkably low profile. From ground or water level, the massive-scale geography comes in small pieces – an island, a town, a maze of channels. Most of the water passages are fairly narrow, intimate.

Travelers reach the Delta via small roads, and "going there" is as much a mental as physical act, for the Delta offers an environment and experience thought by many Californians to exist only in the past, in books, in other places. It's no wonder Sam Clemens (Mark Twain) felt at home in Northern California; the Delta was like the Mississippi area where he once lived. But unlike the Mississippi Delta – or for that matter the Nile, Yangtze, Tagus, or Ganges deltas -- the natural Bay-Delta processes and environment still thrive.

4.3 Characterization of Aquatic Recreation

The Delta offers a diversity of settings, water depths, microclimates, and physical resources, thereby attracting a wide variety of recreation boaters to its waters. Varying aquatic habitat and seasonal and tidal wetlands attract a diversity of fish species and waterfowl. Abundant and dispersed boating facilities provide mooring and launching sites and public and private campgrounds provide opportunities for extended stays. Boaters who visit the region range from anglers and enthusiasts attracted to calm quiet waters for wildlife viewing to groups attracted to the unique wind conditions that occur at the confluence of the Sacramento and San Joaquin Rivers to water-skiers and personal water craft (PWC) users. But there are other reasons that the Delta is a preferred aquatic recreation destination in California.

The Delta contrasts with other freshwater recreation venues in the State. Most of the California large freshwater recreation destinations are seasonally limited due to annual fluctuations resulting from flood management, hydroelectric power management, and potable water storage. Some of the larger reservoirs such as Lake Shasta, Oroville, and Folsom experience up to 125 feet of "draw down" from peak storage capacity levels to minimal operation levels. This seasonal water level variability is further magnified during drought years. The draw-down effect results in considerable reduction in actual water surface area, limiting the amount of area navigable by boat. Draw-down also makes negotiating access and egress logistically more difficult and creates a less attractive setting by exposing un-vegetated banks. In contrast, because of its sea level elevations and proximity to the

San Francisco Bay, the Delta does not experience these extreme water level fluctuations.

The Delta's size, complexity, and geographic diversity present a recreation opportunity vastly different from other freshwater sites. The Delta is characterized by the length of its various streams, channels, sloughs, cuts, and rivers that create diversity of place, an added dimension that has no comparison in California or even in the western United States. The Delta consists of a system of navigable pathways leading to a broad variety of destinations. The Delta also is a non-recreation travel corridor to and from the Bay Area and upper Central Valley, as well as a means for travel between the adjoining communities within and around the Delta. The linear arrangement of the many channels offers road-like qualities with unimpeded accessibility, an historic attribute. Prior to its agricultural conversion, the Delta was a water highway between San Francisco and Sacramento and the Gold Country. In the 1800s, the fastest and most direct means of travel between Sacramento and San Francisco was by ferryboat through the Delta.

In contrast to many state reservoirs, the Delta has fewer restrictions on types of water crafts permitted, number of boat users (all classes) allowed on any given day, and types of engines or fuel systems allowed.

Boating Types

Water-dependent (boating, waterskiing, fishing, swimming, windsurfing, and sailing) or water-enhanced (camping, picnicking, hiking, bicycling, hunting, and scenic/wildlife viewing) recreation comprises the majority of existing recreation activities in the Delta. Aquatic recreational enthusiasts can be grouped into two main categories based on boat size.

- Larger Boats (non-trailerable, sail, or motor boats greater than 26 feet in length)
- Small boats (trailerable, including sail boats, motorized and nonmotorized boats)

These classifications are based on the type of infrastructure required to support these boat types and the limits in range of activities that can be engaged in based on water depths or other physical limitations.

Larger boats

Larger boats include powerboats, sailboats, and houseboats. Powerboat users often have membership in one of several yacht clubs in the Delta, use one of the many marina facilities to harbor their boats, or navigate from downstream (San Francisco Bay) or upstream (Sacramento River) locations.

Typically, powerboat cruising activities are linked to the Delta resource, with most activities involving some form of exploration of the myriad Delta channels. Some boaters seek social gatherings with other social-minded boaters for "floating party" venues. Warm weather and relatively sheltered water conditions are important considerations for choosing to boat in the Delta.

Sailboat users are predominantly yacht club membership-based. In contrast with the powerboat cruisers, they are also attracted by the adventurous side of navigating in the confines of the Delta. Sailboats are typically confined to the contiguous and larger waterways with the prerequisite wind conditions for sailing and sufficient water depths and channel widths to safely navigate.

Houseboat recreationists tend to move to different locations based on aesthetic and comfort considerations. They are attracted to the warm weather and peacefulness of setting. Wildlife viewing, socializing, and fishing are typical activities that houseboat recreationists participate in.

Powerboat activities in the Delta tend to be concentrated in the summer months (Memorial Day to Labor Day), but can occur throughout the year. Fourth of July weekend is the single peak-use event of the year, followed by all other summer weekends and special event days. Sailboat users tend to concentrate their activities during the summer months primarily because it is the period when the optimum wind conditions are present. While holidays and weekends are generally the peak-use times, sailors will utilize Delta waterways seven days a week throughout the sailing season. Although houseboat rentals are generally available year-round, their use is typically low during the winter months and peaks during the summer months. Both climate and stronger current flows in the main channels are factors in reduced houseboat use during the winter period. Because large boats tend to be self-sufficient, facility dependency is generally limited to facilities that furnish replenishment supplies or provide general services.

Smaller Boats

The smaller boat category includes a full spectrum of water recreation enthusiasts. Boat type and size vary considerably, but share the common attribute of being small enough to be trailered by vehicle to launching sites at the water resource. Diversity and complexity are the primary draws that attract the owners of small boats to the Delta. Preferences of activities range widely but are highly dependent on sub-region microclimate and settings. With the greater maneuverability, small boats can better exploit the Delta's complex, interconnected system of waterways and diversity of settings. Within this sub-group are both the motorized and non-motorized types of crafts. Although currently a relatively smaller percentage, non-motorized

crafts comprise an increasing use and include both the wind-power craft and paddle craft. Wind and current conditions are major factors for location and route selections for these types of recreation activities.

Smaller powerboat use intensifies during the summer. Because powerboats typically do not have overnight accommodations on board, boaters tend to use Delta campground or day-use only facilities. Smaller powerboats have a greater range of travel and are only restricted by the very shallow water reaches and channels impeded by snags or aquatic vegetation. Powerful engines combined with relatively smaller size allow them to cruise the stronger currents of the main channels even though it may make for a very bumpy ride. The smaller boat recreationists tend to prefer destinations where they can get off their boat, use the restroom, walk, or engage in some related recreational activity such as swimming, sunbathing, or camping.

A sampling of the many recreation activity locations around the Delta include:

- Existing access points for boating, personal watercraft use, and waterskiing include areas near Eight Mile Road, SR 12, Victoria Canal, Grant Line Canal, and Old River.
- Houseboating is broadly dispersed in the summer months but larger concentrations may be found along Eight Mile Road because of favorable conditions and rental facilities there.
- Windsurfing typically occurs along the out flow of the Sacramento and San Joaquin rivers with numerous access sites along SR 160 between Sherman Island and Rio Vista.
- Sport fishing is virtually Deltawide depending on tide and fish preferences (what's "running"). Sports fishing includes shoreline fishing, fishing tournaments and an array of specialized fishing events and activities.
- Popular aquatic hunting areas include Cache Slough, Sherman Island Wildlife Area, Franks Tract State Recreation Area, Big Break and Liberty Island.
- Numerous vegetated islands, some with private boating facilities, are along the San Joaquin, Middle, and Old Rivers corridors.
- Sheltered settings with many "dead-ended" sloughs are located Deltawide.
- Waterskiing, wakeboarding, and personal watercraft use occurs on White Slough.
- Canoeing, kayaking, and PWC use occurs on Potato Slough.
- Favored waterskiing and wakeboarding locations are on the North and South Forks of the Mokelumne River.
- Fishing occurs along the west side of Bouldin Island.

- Georgiana Sough is popular for fishing and PWC use.
- The Delta Cross Channel provides a shortcut to Delta Meadows, Snodgrass Slough, and access to marinas and restaurants along both forks of the Mokelumne River near Dead Horse Island. When the channel gates are closed, boaters must travel over 20 miles around Tyler Island to access destinations.
- The lower portion of Snodgrass Slough is popular for waterskiing, wakeboarding, and PWC use.
- Natural areas in the upper portion of Snodgrass Slough provide ideal conditions for canoeing and kayaking.
- Lower Cosumnes River is popular for canoeing and kayaking.
- Three-Mile Slough is popular for fishing.
- Delta Meadows is one of the most preferred natural areas for overnight mooring.

Recreational Features in Public Ownership include:

- Stone Lakes National Wildlife Refuge (U.S. Fish and Wildlife Service) offers wildlife viewing, fishing, non-motorized boating, and trails.
- Delta Meadows River Park (Department of Parks and Recreation) provides for kayaking, canoeing, walking trails, and fishing.
- Brannan Island State Recreation Area (Department of Parks and Recreation) provides for boating, camping, fishing, swimming, and windsurfing.
- Cliffhouse Fishing Access (Sacramento County) offers fishing, clamming, and windsurfing.
- Georgiana Slough Fishing Access (Sacramento County) provides for canoeing, kayaking, and fishing.
- Westgate Landing (San Joaquin County) provides for boating, fishing, and camping.
- Cosumnes River Preserve (multiple agencies) provides trails, birding, picnic areas, canoeing, and kayaking as well as an information center.
- Franks Tract State Recreation Area (Department of Parks and Recreation) offers bass fishing, fly-fishing, and duck hunting.
- Big Break Regional Shoreline (East Bay Regional Parks) offers limited hiking, biking, and wildlife viewing. It soon will offer multiple trails, a boat launch, parking, restrooms, and the Delta Science Center, a floating research and public education center.
- Sherman Island Launch Ramp (Sacramento County) provides access for hunting and fishing as well as for water picnickers and is a very popular spot for wind surfing. Lower Sherman Island

- Wildlife Area provides additional hunting and fishing opportunities.
- Clarksburg Fishing Access and Boat Launch (Yolo County) provides limited opportunities for day use, fishing, picnicking, and limited parking.
- Yolo Bypass Wildlife Area offers hunting trails, picnicking, and wildlife viewing opportunities.
- Clifton Court Forebay is a popular bank fishing and boating area.

4.4 Aquatic Recreation Elements of the Surrounding Jurisdictions

This section describes the local planning context for aquatic recreation use and development in the Delta. Information provided includes descriptions of municipal jurisdictions in the vicinity of the Delta and their relationship to the Delta Primary and Secondary Zones; information about land use designations and policies that affect recreation use and development in these municipalities; and details about specific park, recreation, and open space policies that provide for recreation use and development of active recreation facilities such as marinas, boat launch facilities, and fishing piers.

Information for this review has been collected largely from the General Plans of Delta cities and counties as well as their park, recreation, and open space master plans.

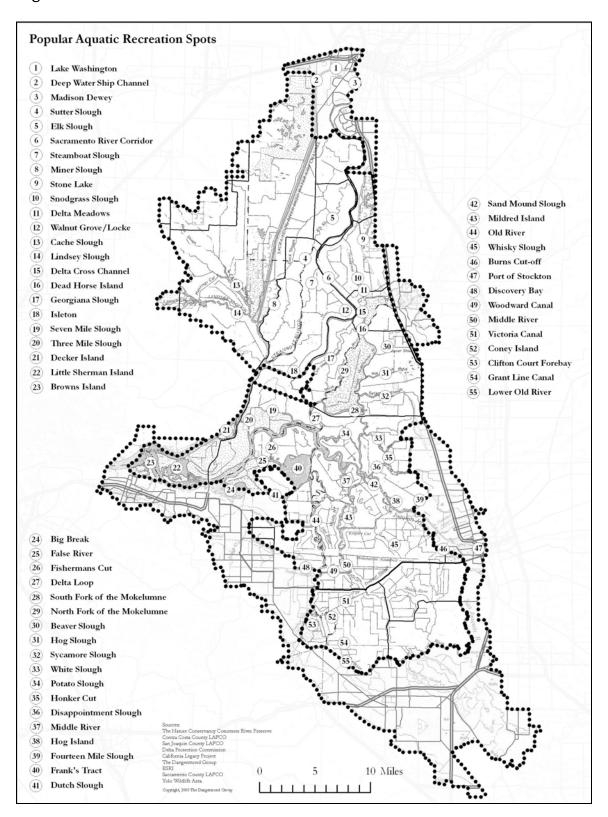
The majority of land in the Delta lies in the unincorporated areas of five counties: Contra Costa, San Joaquin, Sacramento, Yolo, and Solano. The Delta region, which encompasses approximately 738,000 acres, adjoins the cities of Sacramento and West Sacramento to the north; Elk Grove and Galt to the east; Lodi, Lathrop, and Stockton to the southeast; Tracy and Mountain House to the south; and Oakley, Byron, Brentwood, Antioch, and Pittsburg to the west. These municipalities fall outside of the Delta Primary Zone but within the Legal Delta (Secondary Zone). As described above, most of these municipalities border on the Delta Primary Zone. The Delta is in close proximity to the cities of Davis, Dixon, Vacaville, Fairfield, and Suisun City to the northwest. Isleton is bounded by the Primary Zone to the North, East, and South.

Delta lands under county jurisdiction generally are designated for agricultural use. Other land use designations include recreation, water, and resource conservation. In the Primary Zone, urban-scale development is prohibited. County policies regarding the Delta focus primarily on resource protection, flood control, and agricultural land preservation. Passive recreation uses consistent with these primary goals are permitted. Passive recreation facilities include campgrounds, hunting clubs, docks, boat

launching facilities, and fishing access points. Some counties permit and promote more active recreation facilities such as marinas, RV parks, and golf courses in urbanized areas. All of the counties in the Delta have stated policies requiring compliance with the goals, policies, and provisions of the Land Use and Resource Management Plan for the Primary Zone of the Delta (1995) as adopted by the Delta Protection Commission.

Delta counties primarily provide passive recreation opportunities at regional facilities such as parks, public shorelines, open space areas, and river parkways. Typically, counties rely on municipalities within their jurisdiction to supply facilities for more active recreation use (e.g. sports fields.) County policies acknowledge the importance and promote the protection of the Delta's recreational values. Recognizing the limits of county resources, county plan policies promote public/private partnerships for the development of recreation facilities and public access to the water.

Figure 4-7



Policies regulating urban development in the Primary Zone of the Delta protect the natural and scenic values that enhance the recreation experience of Delta visitors. Undeveloped county facilities offer opportunities for development of recreation facilities. However, proximity to agricultural uses creates the potential for conflict between recreation facilities and agricultural production. Considerations should be made in the design and development of recreation facilities to ensure that viable agricultural uses continue in the Delta. The inclusion of set backs, berms, buffers, perimeter fences, screening trees, or signage in recreation facility design might reduce the potential for conflict between recreation and agriculture uses.

Some municipalities along the edge of the Primary Zone focus on waterfront development with the Delta as a prime attraction for redevelopment of these areas. The cities of Pittsburg, Antioch, Sacramento, West Sacramento, Isleton, and Stockton focus on waterfront development as an attraction for their redevelopment. Various municipal policies promote development of mixed use activity centers along the waterfront to attract amenities such as retail, residential, office, restaurant, marinas, and boat launching facilities. Typically, the municipalities emphasize offering multi-modal public access to the water as well as maintaining visual public access to the water. Therefore, most plans provide for trail connections to and along the water in riverfront parkways or waterfront parks. Some municipalities propose specialized facilities along the Delta waterfront such as a multi-use aquatic center in West Sacramento that would provide opportunities for sailing, rowing, canoeing, and kayaking, and the Delta Science Center in Oakley, a proposed research, education, and restoration facility.

Cities and special recreation districts adjoining the Delta operate a range of recreational facilities at the neighborhood, area, and citywide scale. Planning policies also reflect willingness on the part of the cities to participate in and support regional recreation planning efforts. Some specific areas identified in local plans as being significant for recreation and/or requiring improvement and development include:

- San Joaquin River (proposed shoreline park)
- Dutch Slough (Oakley)
- Big Break (Oakley)
- Old River (Mountain House)
- Sacramento Riverfront (Old Town and West Sacramento)
 - East Port property (West Sacramento)
 - o Barge Canal (West Sacramento)
 - Stone Locks (West Sacramento)
 - Broderick Boat Ramp (West Sacramento)

As urban areas continue to grow, the demand for recreation facilities and access points to the Delta will increase. The creation or redevelopment of waterfront areas will provide greater public access, greater awareness of the Delta, and an opportunity to develop recreational facilities. In fact, recreational facilities and use areas are an integral part of the plan policies of many municipalities in the Delta. Unfortunately, implementation of these plan policies is inconsistent. In several cases, the recreation component of approved private development proposals have been removed from projects because of cost burdens borne by the developer or regulatory/environmental issues.

The Delta Protection Commission lacks the regulatory authority necessary to ensure that recreation facilities promised are actually constructed; oversight is to local communities and their approval processes. Currently, in the Secondary Zone, the DPC is limited to the role of reminding jurisdictions of their obligations to adhere to and follow through with their approved plans (advisory comments). The Delta Recreation Master Strategy will help the DPC guide decision making, increase appropriate uses in diverse areas, and take advantage of planning and funding opportunities, all of which occur in a densely complex region.

4.5 A Quilt of Public and Private Land

The Delta consists of a collection of public and private holdings that are physically and politically entwined. This is a consequence of the general nature of the landscape and the level of engagement that both public and private interests have in the Delta. For the most part, the lands are privately owned, yet the roads and bridges that connect them are public. Levees are typically developed and maintained on easements held by Reclamation Districts (special districts) over private property. And the waterways upon which the region's environmental and economic life depends are regulated by a labyrinth of Federal, State, and local government agencies. These same recreation-resource rich waters also are a source of drinking water for two-thirds of the state's population.

The result of this "quilt" of interests is a high level of interaction between different roles and functions within the Delta. For example, aquatic recreation must be responsive to issues associated with adjoining private lands managed for intensive agricultural uses. Aquatic recreation must also co-exist with the overriding functions of water conveyance and storage, and the associated channel modifications and modifications to natural hydrologic regimes. In addition, construction of recreation facilities must adhere to

environmental considerations to protect the species and habitats that make aquatic recreation possible.

4.6 Delta Boating: Opportunities and Constraints

A number of conditions in the Delta present issues of concern to recreational boaters. Boating safety, both physical and health safety, are user concerns. Safety risks are due, in part, to the high number of recreational and commercial boaters on Delta waterways and the inherent conflicts between different types of uses. Additionally, risks are associated with the serpentine configuration of the Delta waters, lower numbers of marine patrols and officers on waterways resulting from county budget cuts, navigational hazards present in Delta waterways, and channels congested with aquatic weeds. A summary of these potential constraints includes:

- Sediment accumulation in channels and waterways/shallow water;
- Water gates, screens, and barriers;
- Invasive aquatic vegetation that congests waterways;
- Waterway obstructions such as snags, submerged debris, floating objects, old piers and pylons, and remnant submerged structures on the inundated islands such as Franks Tract and Liberty Island;
- Highly sensitive habitat areas (A constraint as they modify boating behavior like speed. An opportunity for low impact reaction, like canoeing or kayaking.);
- User group conflicts;
- Water management related constraints;
- Regulation and law enforcement issues;
- Preponderance of private lands in Delta agriculture-recreation conflicts;
- Lack of boating destinations, particularly beach-type frontages; and
- Lack of shore fishing access and boat launches.

Delta Physical Configuration

The Delta is made up of approximately 635 linear miles of waterways separated by a labyrinth of islands. The channels and sloughs are rimmed by man-made levees created to allow a tidal flood plain to be managed for agriculture. The alignments of some channels follow natural stream courses and others were created or altered to meet specific needs. Channels designed for water distribution, to direct water flow, or for navigational purposes often have unnatural characteristics that create hazards to recreational boaters. Many waterways regularly intersect at drastic right angles and result in blind corners. Channel widths frequently decrease in size from one waterway to the next. Low elevations in the tidal floodplain mean that water levels and

flow velocities are subject to tidal influence and, thus, extreme changes in boating conditions can occur rapidly in smaller channels.

Obstacles and Hazards Create Need for Heightened Awareness

Piloting a watercraft in the Delta requires a keen awareness of potential safety hazards, not only to prevent damage to watercraft, but also to avoid injury. According to data from DBW, the accident and fatality rates in the Delta are lower than in other freshwater areas, particularly on lakes. The Delta's geography demands more awareness of location, and it brings its own hazards that everyone in the water must heed: DBW's Boating Safety Report (2003) notes that 40 percent of all boating accidents are caused by operator inattention and 33 percent are caused by operator inexperience.

After automobiles, recreational boating accounts for the second largest number of transportation-related deaths. While the vast majority of craft on the water are motor boats, the hazards of the river and Delta put all users at risk. DBW reports that 28 percent of all accidents involve personal water craft (PWC). The Boat Owners Association of the United States says that canoes and kayaks have the highest fatality rate of all boat types – twice the rate of PWC and four times higher than open motorboats. National data show that the majority of drownings in the country occur in natural water environments.

Delta waters present a special category of risks: swift main currents, large wakes, back eddies and eddy lines, boils, deep channels within the wide riverbed, and daily fluctuations in river flow-levels which can hide sandbars and mudflats. Delta waters do not just flow, they move things, notably silt. It not only fills in marinas, it builds up around other obstacles in the waterway, creating sandbars which currents can shift around like sand dunes. Water moving around obstacles creates eddies which are very dangerous to swimmers, kayakers, and PWC users.

Perhaps the greatest danger comes from floating or submerged obstacles – anything from submerged pylons to large rocks, logs, or entire trees washed down from the Sierra during storms. A specific hazard around Liberty Island, Frank's Tract, and Mildred Island is the remaining debris from their terrestrial history including trees, structures and posts. Other submerged obstacles include cars involved in accidents on levee roads and sunken boats. Particularly dangerous to operators of smaller craft are river obstructions that allow water to flow through, but block people and boats. These "strainers" can be overhanging branches, limbs, and log jams. Winter storms will raise the water level above brush and sometimes tree limbs and also bring additional debris into the Delta which can build up against rocks, docks, bridges, and pre-existing obstructions.

Submerged obstacles pose risk of damage to boats which can run aground on sandbars and shallow areas. A boulder, tree, or other shifting debris can puncture the hull and sink a boat. The American Association of Port Authorities notes that the most common accident claim involves "struck a submerged object" and groundings.

Government charts showing known depths, channels, hazards, obstructions, and aids to navigation on the major waterways in the Delta are available from nautical chart agents listed in the Yellow Pages under "maps" or "marine equipment." Safe Boating Hints for the Delta is a free publication of the State Department of Boating and Waterways, available online: http://www.dbw.ca.gov/Pubs/Delta/SBHDelta.pdf

Sediment Accumulation in Channels and Waterways

The Delta is not just a place; it also is a natural geologic/geographic formation. The region was created by a process of materials transfer throughout the watershed to the low point in the system – the Delta. Imposing manmade levees and general flow barriers in this natural

formation can exacerbate and accelerate these natural processes, specifically the process of siltation, or deposition of sand and soils. Additionally, massive sedimentation from hydraulic placer gold mining in the 19th century has left an indelible mark on the configuration and depth of the waterways in the contemporary Delta.

Currently, sediment accumulates in the channels and waterways. Silt can accumulate from three to eight feet in any given year at marina facilities along the Sacramento River. Sediment accumulates at particularly high rates during heavy winter flows. Portions of the Mokelumne River that, prior to the hydraulic mining of the late 19th Century, were recorded at depths of up to twenty feet are now as shallow as six to eight feet.

Siltation significantly affects navigation through the various channels as well as the viability of the marinas and boat-serving facilities. Sedimentation has led to the closure of marinas and boating facilities in severely clogged channels.

Silting not only creates access problems for boats, but also can raise the water level in relation to adjoining levee structures. This rise in water level can jeopardize the integrity of the levee system because of increased erosion forces such as wind-generated wave action. By affecting levee integrity, siltation can impact flood protection and the safety of properties, the channels, and sloughs.

The stringent regulations and lengthy, complex permit requirements for dredging silt out of channels and marinas burdens the marina owner or boating facility operator. Marina operators have stated that dredging-related regulations should be streamlined or better coordinated among regulatory agencies to provide marina owners more flexibility in the removal of silt materials. In addition, channel dredging for levee maintenance is currently being slowed by the same regulation/permitting constraints. The San Francisco Bay Long-Term Management Strategy (LTMS), an interagency effort coordinated through the Bay Conservation and Development Agency (BCDA), provides a model for management strategies to remove and dispose of sediment. Contra Costa County and the US Army Corps of Engineers are currently investigating the feasibility of setting up a similar program for the Delta.

Marina Dredging

The natural or manmade features that protect most marinas from wakes and waves create a need for most maintenance dredging at these facilities. Silt settles out around groins and breakwaters and builds up over time until the material is either removed or the passage becomes so filled or hazardous to boaters that the marina cannot remain open. Entrances into sheltered marinas require the most continued maintenance.

Some marinas are located in exposed areas of the Delta, such as parallel to the levee of a normally slow-moving river or slough, with access from the levee. Siltation in these marinas builds up under the docks. Boat wakes and prevailing currents tend to carry materials and deposit them where the current slows, e.g., around piling and moored watercraft. Although material removal is required less frequently than at entrance channels, the problems associated with under-dock dredging can cause higher costs and present greater environmental risks.

Dredging inside protected basins is not often required because most basins are over-dredged when built to reduce the need for maintenance dredging. Although it is not common, some marinas have not been dredged since they were constructed. Basin cleaning typically occurs when a marina is reconstructed. This dredging operation is the most expensive and time consuming.

Dredging Costs

Maintenance dredging is the single most expensive routine maintenance item on the yearly budget (or five-year plan) of most marina operators. Costs associated directly with dredging are: engineering fees for site inspections, surveys and plans; engineering and administrative fees for permit applications and permits; pre-dredging costs for boat and/or dock movement and storage; dredging (costs associated with the physical act of removal of the spoils from the marina); disposal of spoils in deep water or upland sites; and cleanup after the dredging operation.

Not all dredging operations have all of the above costs associated with them, however, the first maintenance permit and dredge operation has most of the above costs, while yearly dredging under a ten-year maintenance permit will only entail the physical costs listed above. Entrance channel cleanup is much less costly (per yard of material dredged) than a full-basin cleanup. Even when no boats or docks are removed, the time required to work around a basin full of boats and docks significantly increase per cubic yard costs. Because of this cost and the time required, most marina operators will wait until dredging is absolutely required before spending money on a dredging operation. In terms of dollarsper-cubic-yard of material, the costs vary so widely that even a generic figure is impossible to estimate. Some of the many factors considered by the dredger are:

- cost of mobilization to the site
- type of material to be dredged
- disposal area and type of disposal
- possible soil contaminants
- ease of access to dredged area
- time constraints on dredging operation
- time of year (weather factors)
- permits constraints on dredge operations
- type of dredge equipment to be used for the operation

Dredge Permitting

Federal, State, county and even some local government agencies have input into the permitting process.

Federal	State	Local
US Army Corps of Engineers US Fish & Wildlife Service National Marine Fisheries Service	Department of Fish & Game State Lands Commission Regional Water Quality Control Board Department of Boating & Waterways Reclamation Board Department of Water Resources Environmental Protection Agency	City/County Building Departments Public Works Departments

A Lead Agency Makes the Process More Manageable

Obtaining a dredging permit can take six months to more than two years. A significant amount of time and work contacting all the various agencies and departments involved is required. If an agency is left out of the loop, it is sometimes preferable to start the process again from the beginning. For this reason, applicants can benefit by having a lead agency to act as point through the process. Lead agencies can be a city or county department or perhaps the US Army Corps of Engineers. An alternative to having a lead agency is hiring an engineering firm to obtain the permit and act as the point of contact for the owner.

Once it is determined that dredging at a marina must be pursued, studies, engineering, and other permit factors may delay actual work for years.

Water Gates, Screens, and Barriers

The Delta Cross Channel, located in Walnut Grove, is seen as a critical link to recreational boaters in the Delta, a primary connection route between the Sacramento River and the Mokelumne River system. This channel provides direct access to some of the most popular areas in the Delta, such as Snodgrass Slough and Delta Meadows. The primary function of the Delta Cross Channel is to move water between the primary drainage systems of the Sacramento and Mokelumne Rivers to convey water and manage peak flow. The cross channel was built in the 1950s as part of the Central Valley Project (CVP). It was built by excavating a channel through dry land to the gate affixed bridge. It allows only small boats to pass through. There is no boat lock at the Delta Cross Channel. Recreation boating is considered an incidental use. During periods of closure, boaters are unable to make the direct link to the Mokelumne River system and they are forced to take lengthy, alternate routes. While historically the gate was closed largely during the winter, it is now operated more days per year to direct migratory fish into the Sacramento River during key times of the year. Operation periods are variable and boaters typically do not know in advance whether it will be open or not.

Another important navigational obstacle is the Stone Locks gate (in West Sacramento) at the north connection point between the Sacramento River and the Sacramento Deep Water Channel. The Shipping Channel was also dredged from dry land. The Stone Lock has been closed since 1991 due to operational funding shortfalls. There are small boat facilities located west of the lock that take advantage of the Ship Channel. Boaters can access the channel from the south end near Rio Vista.

CALFED associated barriers, diversions, and screens are anticipated to affect boating corridors in the future. These devices will be used to control water elevation and to reduce adverse effects on juvenile fish resulting from water conveyance and pumping activities. Since these barrier features are anticipated to have a significant impact on boating circulation and access on specific waterways in the Delta – particularly in the Southern Delta Reaches – DWR proposes to mitigate for the impacts by providing boat locks to allow small boat passage when the barriers are operational.

Recreation Boating-Related Impacts to Levee Integrity

Shoreline erosion occurs along all watercourses. It can be linked to natural occurrences such as wind generated waves or human activity including boat generated waves and the removal of shoreline vegetation. As recreational boating increases in popularity and diversifies in terms of the types and power of the watercraft using waterways, the risk of damage in the Delta increases.

Levee integrity is imperative to flood control, the viability of land side properties, productive land uses, water quality, and the Delta aquatic ecosystem. It is important that boaters and agencies with land management responsibilities in the region understand the potential negative impacts of boating activities in order to create and implement precautions that ensure the health of the Delta and preserve the resource for future generations.

Levee erosion has the potential to create many problems within the Delta. The consequences of shoreline erosion include habitat destruction, increased sedimentation and turbidity in the water, salt intrusion, the release of nutrients, and the outright loss of levee systems and agricultural lands. Besides promoting algal blooms by increasing nutrient loads in waterways, increased levels of sediment also impede light from reaching the bottom of waterways, negatively affecting underwater plant and animal populations. As turbidity increases and water clarity decreases, fish populations are endangered as larvae struggle to survive.

Besides ecosystem damage, shoreline erosion can have economic impacts. Erosion can lead to levee failure and massive flooding. Not only does flooding cause problems in towns and for development adjoining and within the Delta, but it can result in inundated arable land ruining crops and removing land from agricultural production. Increased sediments from nutrients that enter watercourses build up and create shoals that obstruct navigable waterways.

If erosion were to cause levee failures in the Delta, the reliability and quality of Delta water supplies could be affected. Levee failure would allow large volumes of brackish water to rush into the freshwater areas from the estuary. Permanent flooding of Delta islands in the west would increase the upstream movement of ocean salts threatening habitat and drinking water supplies.

Watercrafts create visible tracks of turbulence—wakes--as they travel through a watercourse. Wakes create waves that strike the banks of rivers and channels. The size and amount of energy in a wake generally depends upon four factors: distance from shore, hull size, boat speed, and water depth. These factors also affect the extent of the damage a shoreline may incur.

Levee erosion is not an irreparable and unavoidable consequence of boating. Boaters can reduce the impacts of their activities. It's as easy as checking boat speed in narrow channels, being aware of the types and amounts of vegetation along shorelines, and being aware of the size of wake the boat is creating. The impact of a boat's wake on shorelines can be greatly reduced if boat operators slow down before entering no wake zones and observe speed limit signs.

Agencies and land owners and managers can help as well. The location of recreation sites is important, and agencies can work to ensure that highly impacted levee segments are adequately protected with vegetation or rip rap. Local governments and land managers can divert high speed recreation from levees that are inadequately vegetated, unprotected, or already damaged. They can also collaborate to convert highly vulnerable areas to non-motorized uses.

Understanding the potential risks posed by boating activities, working to educate users, and creating and implementing safety measures will help ensure that the Delta can continue to provide recreational opportunities far into the future.

Invasive Plant and Aquatic Species

The Delta is one of the most impacted environments in the State in terms of the numbers and variety of invasive species finding suitable conditions in its waters and surrounding landscape (see Non-Native Plants sidebar). Invasive aquatic vegetation (water hyacinth and *egeria densa*) has been identified as a significant problem for boating in the Delta because it can clog marinas and channels and damage boats. Consequently, it has become a significant ongoing operations and maintenance issue. Where invasive species occur in conjunction with private facilities, there can be coordinated public to private control programs, but beyond the limits of the private operator's facilities, it is sometimes difficult to implement effective removal programs. Like sediment-related dredging needs, this limitation should be considered in recreation planning. Regional efforts are required to address aquatic vegetation to enhance boating conditions in the Delta.

Water Hyacinth was introduced into California more than 100 years ago. Forming dense, floating mats, it is an attractive plant, with shiny green leaves and delicately transparent lavender flowers. However, it is an extremely prolific aquatic weed that can quickly amass a dense vegetative barrier. With few natural enemies, it can grow faster than any other terrestrial, saltwater, or freshwater plant, especially in warmer climates. By the early 1980s, severe infestations of Water Hyacinth had clogged navigation channels and marinas, creating safety hazards for boaters. Water Hyacinth also affects the Delta aquatic ecosystem by decreasing the amount of dissolved oxygen in the water and displacing the existing biotic community. Hyacinth floats atop the water and can easily be controlled by application of herbicides.

Egeria densa is a popular aquarium plant that has been introduced into the Delta. This waterweed forms dense, submerged mats of vegetation which can bind propellers, tie up boats, and shut off engine intakes. It also is very dangerous for swimming. Egeria densa can accentuate the process of siltation of the waterways. It has been a severe problem in the Delta since the early 1990s, spreading over the Central and West Zones, affecting Franks Tract, Piper Slough, and Sand Mound Slough. This species has been a major concern for the boating community of Bethel Island, which fronts onto Franks Tract. Egeria is rooted to the channel bottom so mechanical removal that leaves the roots is only a temporary solution.

The Department of Boating and Waterways (DBW) has undertaken an invasive aquatic species spatial analysis to measure the quantity of Egeria and Hyacinth in the Delta and to document the location of these submerged

and floating weeds. At the time of this writing, DBW had received but had not fully reviewed results from their 2004 survey. Preliminary reviews show that Egeria is the dominant weed species in the Delta, covering over 80 percent of the maps created from the survey. DBW will utilize the invasive aquatic species spatial analysis into the future as a tool to measure the efficacy of its weed eradication programs.

Non-Native Plants and Animals Harm Boats and Sport Fish

The Bay-Delta has been called the most invaded aquatic ecosystem in North America. More than 750 species of plants and animals live in the Bay-Delta; over 200 are not native to the region.

The problem with aquatic invaders is that many of them quickly dominate their habitats, choking out native plants, eating native fish or consuming their food, and depleting oxygen in the water, which makes the area unsuitable for natives.

Aquatic pests, notably water hyacinth and *Egeria densa*, are particularly damaging to boats and are an impediment to water recreation. Their effects are detailed in Chapter 4. Other outsiders can dramatically change the aquatic and landside environments. The most immediate impact to Delta recreation will be seen in fishing.

Native fish in the Delta have struggled against depredation for generations. After salmon and other native species began to decline, several types of sport fish were introduced, including the striped bass, black bass, and shad. In fact, most of the Delta's fish are native to the eastern United States. While these fish are popular for sport fishing, they compete with and even prey upon native fish such as salmon.

Although there is an uneasy relationship between introduced and native fish in the Bay-Delta, many other species were not invited and do significant harm. Most "exotic organisms" enter the Bay and ports in Sacramento and Stockton via ballast water from ships engaged in international trade. As trade increases, so does the invasion rate.

Some exotics, like the mitten crab, were introduced via aquaculture. Once in the Bay, the crab rapidly reproduced and spread into the Delta. It burrows in and weakens levees, clogs fish screens at water project pumps, and voraciously eats types of mussels and clams that are commercially harvested.

Another example, the Asian clam, feeds on phytoplankton (fish food) and displaces native clams, shrimp, and small fish. Biologists believe the clam adversely affects smelt, young salmon, and striped bass. Another invader, the Inland Silverside, is a little fish introduced intentionally to control insects outside the area. It competes with and eats the endangered Delta smelt.

Zebra mussels as filter feeders compete with fish for food, and can be transported by recreational vessels. These mussels also have the ability to colonize boat hulls and cooling water inlets, which could lead to boat engines overheating.

Waterway Obstructions

Prior studies have repeatedly cited water obstructions as a significant problem for boaters using Delta waters. The Franks Tract area has been identified as an especially dangerous area for boating because it was once a levee-protected island and now, although returned to open water, is shallow and obstructed by submerged levees and vegetation debris.

Snags, debris, and floating logs in the river and sloughs are very dangerous to boaters in other parts of the Delta. Until twenty years ago, the Army Corps of Engineers was responsible for keeping the waterways clear. The Corps no longer provides that service. The responsibility has fallen to local county sheriffs' departments, which lack both the manpower and proper equipment to adequately provide obstruction removal services. While local law enforcement may have the capability to tow away mobile objects such as submerged boats, they may lack the means to remove stationary obstacles such as piers, pylons, or old docks. They lack funding to remove the seasonal "crop" of flotsam that follows winter high water flows.

Highly Sensitive Habitat Areas

With the CALFED Record of Decision (2000), it is anticipated that existing habitat areas in the Delta will be expanded and enhanced. These existing/created habitat areas could be linked through water and land corridors that provide opportunities for better wildlife movement. This report assumes that some of these habitat areas will be open for limited public access in boats. Under this assumption, passive recreation uses compatible with wildlife habitat would be enhanced while more intensive uses such as power boating would be diminished. Boating was identified as a "stressor" in the Environmental Impact Report (EIR/EIS) accompanying the CALFED initiatives proposed for the Delta. Measures to reduce these stressors may include reduced speed areas or seasonal or permanent closures of certain Delta waters.

User Group Conflicts

Conflicts between groups of recreational boaters are frequently cited as a significant problem and generally occur when incompatible uses take place in the same place at the same time. The degree of incompatibility between user groups generally corresponds with the extent of difference in their activities. Slower recreationists like house boaters or kayakers often have problems with the excessive speeds and unpredictable behavior of tournament fishing craft or PWC users. Similarly, sedentary fishermen often have problems with active noisy sports, like PWC use. Small vessels can be disturbed by wakes created by large vessels. Less obvious conflicts between seemingly related user groups such as water-skiers and wake-boarders or kite surfers and windsurfers also occur. These conflicts are generally based in the nuance of a sport. For example waterskiing and wake boarding appear alike and seek similar water conditions, however, water-skiers prefer calm smooth waters on which to perfect their skill and wake-boarders actively create large wakes to add to the fun and excitement of their sport. Another big point of contention

among recreationists is "reduced speed zones," such as the 5 mph speed zones near marinas and boat mooring locations. Prior surveys have revealed an increase in the number of restricted speed zones adversely affects the popularity of boating in the Delta. In contrast, paddle sports enthusiasts favor the addition of more reduced speed zones, for they provide safe areas for their non-motorized boating recreation. Some who favor reduced speed zones claim that 5 mph speed zones are poorly marked, and that "5 mph" does not necessarily mean "no wake." A recommendation previously made was to change the signs to read "no wake" zone. No wake zones and speed zones are set by local governments.

Law Enforcement on Delta Waters

The goal of local, state, and federal boating law is to provide a safe environment for the public enjoyment of waterways. Safe waters provide the foundation for positive recreational experiences. Marine patrols responsible for enforcing boating laws in the Delta are provided by the Contra Costa, Sacramento, San Joaquin, Solano, and Yolo County Sheriff Departments with the bulk of county law enforcement services provided by Contra Costa and San Joaquin counties. The cities of Sacramento and West Sacramento, the Coast Guard, the Department of Fish and Game and the Department of Parks and Recreation also provide marine patrol coverage – though the focus of each of these agencies is typically specific to their mandate. Over time, county budget cuts have reduced the number of peace and reserve officers on Delta waters with the ability to issue citations and make arrests. Marine patrol frequency, numbers of patrols, and areas of coverage vary drastically across the five Delta counties.

The number of active marine patrol units in the five Delta counties is not tied to boating activity or number of berths in the Delta. However, boaters and laws enforcement providers believe more patrols will result in higher compliance with safety laws. Multiple jurisdictions and the waterway configuration make the Delta a very difficult area to manage for law enforcement. While there has been a significant increase in boating regulation over time, prior studies suggest that better enforcement of existing regulations would achieve more than adding restrictions. For example, there is little current enforcement of Federal or State pollution laws which require first hand or documented photographic or video evidence to enforce. Additional pollution restrictions won't increase the number of first-hand witness reports of dumping in the Delta, but increased marine patrols could result in higher numbers of direct observance of dumping by law enforcement officials thereby increasing enforcement of pollution laws.

Speed violations, negligent PWC operations, equipment violations (no life jacket), alcohol consumption, poaching, and pollution violations are common violations and frequent causes of accidents.

Another serious and common problem stems from recreationists' misunderstanding of what property is public and what is private. Boaters frequently anchor at low-tide beaches on private property, or tie up to private docks. Private property owners claim that signage does not deter these actions. In addition, there is a large presence of makeshift docks and hideaways along many of the shores of the central Delta, suggesting that there is a deficit of day-use and overnight facilities in the Delta as well as a demand for shore-edge type access points and day-use facilities.

Water Use, Water Quality and Other Environmental Topics

The Sacramento – San Joaquin watershed system encompasses approximately 40 percent of California's land area and conveys up to 47 percent of the State's fresh water. Major tributaries include the Sacramento, San Joaquin, Calaveras, Feather, American, Cosumnes, Tuolumne, and Mokelumne Rivers. With the completion of the Federal Delta-Mendota Canal in 1952 and the State Water Project in the 1960's, the Delta became part of a statewide water delivery system. This federal project involving the transport of water for Central Valley and San Joaquin Valley farms was followed by the California Aqueduct Project and has evolved into a multi-billion dollar water delivery system that networks statewide. Within this system is an array of reservoirs, levee structures, canals, weirs, pumps, and water treatment components. Water from the Delta supplies drinking water for over two-thirds of the state's population (over 22 million people) and irrigation water for more than seven million acres of farmland statewide.

There is also a significant local component to water use in the Delta. The Delta agricultural diversions use water for crop irrigation during the peak summer period. These diversions number up to 1,800 for a total of up to 5,000 cubic feet per second during summer irrigation season. In aggregate this totals about one million acre feet per year. This water is taken directly from Delta channels under riparian water rights. Perhaps even more significant to aquatic recreation, the drainage from the agricultural fields is subsequently pumped back into the Delta waterways. The small communities in the Delta primarily use groundwater for their water needs, and urban water use within the Delta only accounts for a small percentage of the total developed supply. The remaining portion of water in the Delta passes through to the San Pablo/San Francisco Bays. But along the route, this water serves wildlife habitat, salinity inhibition, and other environmental purposes. Aquatic recreation is an incidental use in the context of this

massive, interconnecting water delivery system. Yet water recreation is dependent on the proper functioning of the system, *i.e.*, moving sufficient amounts of water to maintain quality habitat, adequate levels of water for access, and ensuring good quality water. Further, water recreation is a public trust use of the State's waterways.

For the Sacramento – San Joaquin Delta Boating Needs Assessment, a survey was conducted of boaters who used the Delta. Boaters said that water quality was the number one issue regarding negative associations with the Delta. To the extent that the water affects the condition of the resource, quality of the experience, and potential health risks to boaters either through direct contact or consumption of fish caught in its waters, water quality is extremely important to aquatic recreation. The boater is also an agent in this set of issues. The survey found from a public perception perspective that bilge and other boaters effluent wastes were viewed as a major source of contamination of Delta water. The Department of Boating and Waterways has coordinated with private boating facilities to increase accessibility to pump-out facilities for these contaminants and grants covering 100% of the cost of installing pumpouts are available. There are currently 40 pumpouts distributed throughout the Delta that are available to the public.

Mercury Rising

During the Gold Rush, mercury was mined from the coastal range and used to pull gold from gravel in the Sierras. Sediment throughout the watershed, Bay, and Delta is still contaminated with mercury. Biological processes, particularly in shallow wetlands, convert inorganic mercury into methylmercury, which then enables it to move through the food chain, ultimately concentrating in predatory Delta fish such as bass, sturgeon, and catfish. Eating quantities of certain fish caught in the Delta poses a health risk, for methylmercury impairs brain function in adults and brain development in fetuses and children. High levels of mercury in large fish impair their ability to spawn.

Organic mercury continues to flow down from the watershed - via such routes as the Cache Creek drainage - particularly during high flows which scour out natural traps that hold "legacy" mercury. CALFED habitat restoration efforts may increase methylmercury formation, for the best environment for mercury conversion is wetlands. Removing small dams upstream could increase the flow of contaminated silt into the Delta. Channel and marina dredging have the potential of disrupting long-settled mercury, as does wave and current action.

Preponderance of Private Lands in Delta – Agriculture-Recreation Conflicts

The vast majority of lands in the Delta are privately owned. The rich tradition of highly productive agricultural lands managed by private enterprise contributes enormously to the character of the Delta. The DPC and most municipalities and counties have adopted policies to preserve agricultural land. However, while the preservation of agricultural land in the

Delta is a priority, the preponderance of private land limits the ability to acquire appropriate areas for support facilities and access for potential aquatic recreation, because the needs and nature of recreation and agriculture often conflict. Often the presence of urban land uses or other public attractors will reduce the productivity of agricultural land. For example, a nearby public recreation facility or destination could affect aerial pest and fertilizer spray applications. Property owners state that public access may also increases the incidence of trespass, vandalism, and property degradation on nearby private lands.

Urban pressures

Urban pressures are significant with both land-side and residential developments moving closer to the Legal Delta and within the Legal Delta, closer to the Primary Zone. The rapid population increases in residential pockets, such as Discovery Bay and the adjoining cities of Tracy, Byron, and Brentwood, suggest increased pressure on this part of the Delta for accommodating future recreation needs. There is also increased opportunity to provide new recreation and access facilities as part of new development, such as launch facilities for car top and trailered boats, fishing access and docks between land and water. Planning for "urban" waterfronts is underway in several Delta cities.

Limited Landside Destinations

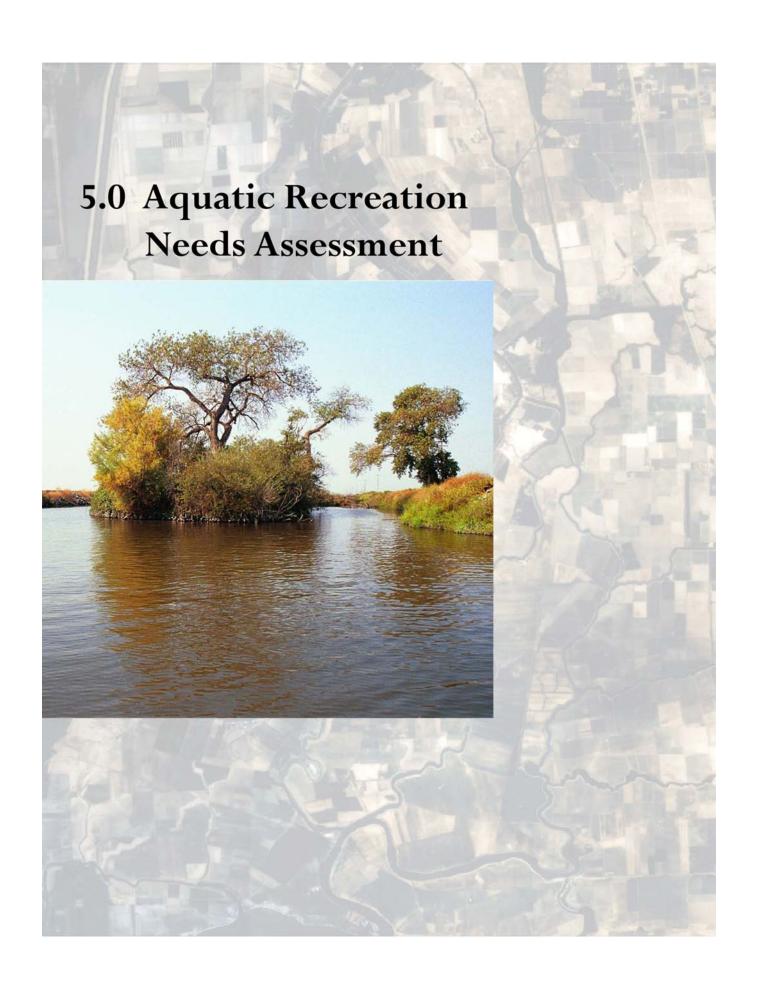
The lack of landside destinations for boaters was identified in previous surveys as one of the main limitations to boating in the Delta. The need for landside recreation points is particularly important for recreationists in small boats and/or on family boat outings. This latent demand for landing sites is evident in the many makeshift docks, picnic benches, and hideouts built on islands and shore frontage, observable along the sloughs and channels in the central Delta. Property owners claim that boaters do not respect private property areas and tend to use private areas as public areas.

Landowners also insist that more public alternatives are needed, particularly the number of boat-in beaches. The beaches that do exist generally are either privately owned or poorly maintained, although there are popular beaches at Solano County's Sandy Beach Regional Park and DPR's Brannan Island State Recreation Area beach. Although beaches are apparently in high demand, they are very difficult to create and maintain. Constructed beaches tend to quickly erode as a result of the fluctuation of tide, seasonal floodwaters, and wave action from wind and boats. Siltation processes inundate beaches, replacing sand with much finer deposits of silt which typically does not make good beaches. Most of the natural beaches in the

Delta tend to be silted. Also, public swimming beaches very often have restrictive operating guidelines related to accessibility standards, lifeguard availability, and required improvements for parking and restrooms.

Lack of Boat Launches

There are several variables affecting the availability of boat launch facilities in the Delta. Based on the 1997 Sacramento-San Joaquin Delta Recreation survey, prepared by the Department of Parks and Recreation, and the subsequent 2002 Sacramento San Joaquin Boating Needs Assessment by the Department of Boating and Waterways, there is a deficit of launching facilities in the Delta. The 1997 study found that a majority of boats using Delta Waters were the trailerable size (15 to 20 feet). However, most of the private marina facilities offer launching ramps as a courtesy to marina tenants with limited public use since they can make limited profits from such services and they are subsequently obligated to provide trailer and vehicle parking areas to fully accommodate the launch facility users. The publicly owned launch facilities are limited because of the limited amount of public lands in the Delta and the relatively high up-keep costs maintaining a functional launch facility (primarily due to constant scouring and/or silt accumulation). Because of the vast scale of the Delta and the tendency for the smaller boat users to recreate in the vicinity of their launching point (most respondents to the 1997 survey stated that they launched their boats in one zone where most of the boating recreation occurs), it would be beneficial to have a well-distributed system of launch facilities to allow access for boaters from different regions, and to distribute boating activity through the Delta waterways. Similarly, expanding and better maintaining existing facilities would be useful in addressing the shortage of launch facilities, in addition to the development of new, better distributed launching sites.



5.0 AQUATIC RECREATION NEEDS ASSESSMENT

Summary Points

Facilities have current needs

- There are 90 boating facilities (marinas) in the Delta; 71% have been in operation for 40 years or more. Field surveyors observed significant deferred maintenance at boating facilities. Operators surveyed were focused on short-term goals and few did long-range planning.
- ❖ A significant number of boat slips will need to be replaced, upgraded, or repaired in the next fifteen years. The greatest need is in the Delta Breezeway zone where 55 percent of slips need this work.

Demand forecasts show increasing needs

- ❖ Although surveys suggest that boating activities in California have not kept pace with population growth since 1992, demand forecasts still show increasing needs. The primary boater population is estimated to currently be 1.06 million, and is projected to be 1.2 million in 2010 but 1.14 million in 2020.
- Annual visitor days are projected to grow from 6.4 million in 2000 to 8.1 million by the year 2020. Increase in visitors will create the demands on marinas for additional boat slips, parking spaces that can accommodate vehicles and boat trailers, dry boat storage and launch facilities.

Current deficits are significant

- Source: The Sacramento San Joaquin Delta Boating Needs Assessment, 2002.
- Seventy-five percent of dock slips are for large boats and 25% are for small boats. If the trend of converting small-boat slips to larger slips continues, this will reduce the percentage of small-boat slips to approximately 10 to 15% by 2020.
- ❖ The Delta has 18% of the state marinas but only 5% of the State's inventory of launching facilities. Multiple, new well-distributed launch facilities would serve small boats better than new centralized larger facilities.

To meet the demand for the year 2020, the Delta will need an additional:

- 465 dry boat storage spaces
- ♦ 90 boat launch lanes
- ❖ 135 transient dock tie-ups
- * 185 restroom fixtures
- ♦ 90 shower stalls
- 15 fuel/pumping stations

There are challenges for private and public sectors in meeting needs

- Part of the challenge of meeting aquatic recreation needs is keeping up with the changing trends in personal preference and changing social patterns.
- Improvements needs outside the control of individual facility operators that users are concerned about include: water quality, improved/enhanced law enforcement, more or better launch ramps, controlling aquatic weeds, more dredging/weed control/removal of submerged obstacles, more fuel sites, controlling PWCs, more destination town sites/courtesy docks/boat-in day use areas, and more boat-to/dock served (destination type) restaurants. Users also wanted better signage for directional, safety, and general amenity-related information.

5.1 Overview and Objectives

This chapter lays the foundation for planning aquatic recreation in the Delta. Existing aquatic recreation activities and facilities are compared to projections of probable demand through the next fifteen years. Much of the discussion addresses the relationship between the private aquatic facility operators and public uses and demand in the Delta.

The chapter is divided into three parts. The first part describes the year 2005 baseline inventory of boating-related facilities along with repair, upgrade, and replacement needs, as identified by marina operators, surveys, and field observations. The second part describes the boating facilities demand forecast. The 2002 *Sacramento – San Joaquin Delta Boating Needs Assessment*, (SSJDBNA), forms the basis for these findings. The third part looks at other variables affecting existing and future recreation opportunities that are not captured in the private boating-related facility needs and demand assessment.

5.2 Baseline Inventory and Projected Improvements

The comprehensive inventory of aquatic facilities conducted for the SSJDBNA was used to update the recreation needs assessment. Costs for projected improvements are adjusted for inflation and other factors. The inventory serves as a baseline to project present and future facility needs in the Delta for replacement, upgrade, and repair aquatic facilities from 2005 through 2020. Three models are used to ascertain the magnitude of facility replacement, upgrading, and repairs for the entire inventory of marinas in the Delta. Each model incorporates different assumptions regarding the relative extent of the three main improvement "approaches" for replacement, upgrades, and repair. These models are evaluated and updated based upon findings from the *California Boating Facility Needs Assessment, 2002 (CBFNA)*. As such, the models provide the basis to project for a mix of facility replacements, upgrades, and repairs based on the age, condition, type of construction, and materials used to build marinas.

Baseline Facility Evaluation Findings

In 2001, boating facility operators identified facility replacement, upgrade, and repair needs in the following order of priority:

- dredging,
- docks/slips,
- dry boat storage,
- launch ramp lanes.
- parking, and

• transient docks (within marinas).

Twenty-two marina owners reported that their marinas needed dredging, while 30 responded that dredging was a priority future need. Many marina operators conveyed the desire to convert smaller boat slips to larger slips to accommodate boats over 26 feet in length and/or boats that stay berthed in the Delta year-round. The CBFNA¹ also noted the trend to convert boat slips from smaller boats to accommodate longer boats.

Marina operators were also interviewed for the SSJBDNA and the majority focused on meeting short-term facility maintenance and improvement needs. Their responses included the following needs:

- add or rebuild docks and slips,
- dredging,
- add sanitation pump stations,
- add or improve dry boat storage,
- add launch ramps,
- pave parking and roads,
- expand RV facilities, and
- add more restrooms.

¹ The analysis presented here is based on data from a survey of Delta boating facility providers. This survey was conducted during the months of July and August 2001. At that time, there were 95 marinas in the delta for which site visits were scheduled. A team of two surveyors attempted to contact all 95-marina owner/managers and successfully visited 65 facilities (68%). The team conducted site visits, measured docks, and interviewed facility managers and/or operators. Of the remaining 30 marinas, twelve were visited and measurements were taken, but the interviews could not be obtained. Nine owner/managers could not be contacted, so the sites were not visited. Five were private yacht clubs which were factored out of the inventory. The final four marina owners declined to participate in the survey. Although the data for facility and replacement needs were not obtained for the remaining 30 marinas, inventory information regarding these facilities was gathered from the previous 1997 inventory of recreation facilities conducted by the Delta Protection Commission and from the California Boater Guide to Harbors and Marinas, issue 2001. Thus, 65 marinas have hard data taken from surveys and 30 marinas have data estimated from other sources. The survey instrument primarily contained questions pertaining to the quantification of existing boating-related facilities, the condition of facilities, and their estimated replacement date over the next two decades. In all, 90 marinas were used as the baseline for projecting facility needs.

Existing Facility Summary

Table 5-1 provides a summary of the existing facility inventory. The average marina in the Delta has 123 boat slips, 58 dry boat storage spaces, and 0.58 boat launch ramps.

			Table 5-1							
Delta Boating Facilities Year 2001 Inventory Summary										
(round numbers)										
Facility	Unit of Measure	Number Surveyed	Number Not Surveyed ²	Total	Average Quantity Per Marina	Number of Marinas with Facility	Percent of Marinas with Facility			
Marinas	Each	65	30	95*			•			
Docks	Sq. Feet	1,320,520	567,370	1,887,890	19,873	95	100%			
Total Boat Slips	Number	8,330	3,350	11,680	123	95	100%			
Covered Boat Slips	Number	5,830	2,340	8,170	86	68	72%			
Uncovered Boat Slips	Number	2,500	1,000	3,500	37	77	81%			
Transient Tie-ups	Number	210	100	310	3	50	53%			
Dry Boat Storage	Spaces	3,810	1,730	5,540	58	63	66%			
Launch Ramps	Number	40	18	58	1	55	58%			
Launch Ramp Lanes	Number	50	30	80	1	55	58%			
Marina Parking	Spaces	5,970	2,760	8,730	92	95	100%			
Vehicle/Boat Trailer Parking	Spaces	1,430	690	2,120	22.3	55	58%			
Restrooms	Stalls	460	220	680	7.1	95	100%			
Showers	Stalls	250	120	370	3.8	75	79%			
Day-Use Picnicking	Sites	220	110	330	3.4	46	48%			
Sanitation pumping	Stations	30	12	42	0.4	38	40%			
Camping	Sites	1,490	700	2,190	23.0	48	51%			
Fueling	Stations	40	19	29	0.6	32	34%			
Bilge Pump-out	Stations	7	3	10	0.1	10	11%			
Oil Collection	Stations	17	8	25	0.3	25	26%			
* Less 5 private Yacht cl	ubs leaves 90	total								

These facilities are distributed throughout the Delta. **Table 5-2** shows the approximate percentage of marinas distributed among the six Delta zones.

-

 $^{^{2}}$ Unsurveyed marina facility data obtained from Delta Protection Commission in 1997 Inventory and from Delta Directories and Maps.

Table 5-2 Distribution of Delta Marinas (Percent)							
Zone	Distribution						
Northern Delta Gateway	8%						
Bypass	1%						
Delta Hub	11%						
Delta Breezeway	55%						
San Joaquin Delta Corridor	19%						
Southern Delta Reaches	6%						
Total	100%						

(For more detail, see Table 5-3)

Marina Operator Surveys

The prior survey (2001) asked marina operators to identify marinas that need to be upgraded and/or expanded and to project their repair needs within 5, 10, 15, or 20 years. Generally, marina operators were so focused on short-term needs that they did not speculate on improvements needed in the longer term. As a consequence, in order to anticipate facility replacement needs over the next two decades, it was necessary to develop additional criteria as described in **Appendix 5–2.** Information gathered from the marina operator survey is summarized below.

The 65 marina operators who responded to the survey identified their priorities as:

- Dredging (30 responses)
- Docks/slips (29 responses)
- Dry Boat Storage (21 responses)
- Launch Ramp Lanes (20 responses)
- Parking (15 responses)
- Transient Docks (10 responses)

In comparison, the CBFNA San Francisco Bay Region (eight counties in the San Francisco/Delta area) boating facility needs identified in Volume II, Pages 1-20, were as follows:

Improvement Type within Marinas:

- Dredging (at 45% of marinas)
- Increased launching capacity
- General facility improvements
- Dock repairs
- Dry storage

- Gas pumps
- Better waste pumping facilities
- Boat slips
- Ramp repairs

Improvement Type outside Marinas:

- Beach areas
- Boating destinations

These facility needs are similar to those identified in the SSJDBNA for the Delta region.

Dredging

Operator survey respondents cited dredging as the most needed improvement. The CBFNA found this need at the top 45 percent for California marina operators' lists; 33 percent of marina operators in the Delta cited dredging as their highest priority need. Marina operators find the permitting process difficult because the marina operator must obtain approvals from a number of regulatory agencies. Numerous marina operators expressed frustration with the process and as a result some have given up trying to obtain permits for dredging. It is important to note that there is another category of dredging need that occurs beyond the limits of the private operator's area of management. This regional and non-facility associated dredging need is also significant but will require public agency involvement and other sources of funding and resources to address.

Docks and Boat Slips

Many facilities constructed in the 1960s or earlier were built primarily to accommodate smaller boats. Based on survey responses, upgrading docks (including marina slips and gangways) is a high priority for marina operators, since 71 percent of the Delta marinas have been in operation for 40 years or more. Field survey staff observed that when docks are upgraded, boat slips are generally enlarged to accommodate larger boats. These large slips accommodate boats that are typically berthed in marinas year-round, while smaller boats are primarily berthed during the warmer prime boating season.

Field note data from the survey team estimated and verified the number and size distribution of boat slips at each surveyed marina. The 90 public-serving marinas quantified in the survey provide an estimated 11,674 boat slips. Of this amount, 2,918 (25 percent) are for small boats (less than 26 feet) and

8,756 (75 percent) are for larger boats (26 feet or greater). The CBFNA also identified dock repairs as a priority need throughout the state.

Dry Boat Storage

Of the 21 marina operators with intent to upgrade or expand dry storage boating facilities, four indicated these as current plans. Dry boat storage usually serves a range of boat sizes, but tends to cater to smaller to mid-sized boats. Dry boat storage includes boats stored on trailers, in storage yards, or boats stacked vertically on racks or stored in buildings. Marina operators prefer rack storage because of the space savings. Boat owners also prefer rack storage because it provides better protection from weather and vandalism. Based on updated estimates, 930 stack-type dry boat storage spaces in the Delta represent 17 percent of the total 5,580 of dry storage space inventory. According to the CBFNA, the Delta currently accommodates 25 percent of California's inventory of dry storage and has a priority need for additional dry storage capacity.

Launch Ramp Lanes (with boarding floats)

Twenty marina operators indicated plans to upgrade or expand launch ramp lanes at their facilities. Of this group, four plan to do so currently and one within the next five years. Launch ramp facilities generally accommodate smaller boats or personal watercraft (PWC). The Delta's 55 launch ramps have an estimated 78 launch ramp lanes. According to the CBFNA, the Delta Region accommodates approximately 18 percent of the boating facilities in California but has only 5 percent of the state inventory of launch lanes. The CBFNA lists increased launch ramp capacity as the second highest need for the region. Other public facility providers including local, county, and state recreation facility providers could augment the need for more launch ramps.

Overflow Parking

Given that the need for additional parking spaces corresponds with the need for additional launch ramp lanes and boat slips, marina operators generally plan to upgrade and expand these boating facilities in tandem. Field surveyors documented a significant amount of deferred maintenance needs in Delta marina parking facilities.

Transient Boat Tie-Ups

Transient boat tie-ups or courtesy docks within marinas are a convenience because they allow boaters to stop at marinas to pick up supplies. Transient docks outside marinas allow boaters to enjoy a restaurant meal, or explore landside attractions such as the community of Walnut Grove. Among the ten marina operators who responded positively to the question regarding plans to upgrade or expand transient dock tie-ups in the 2001 survey, four indicated they had plans to do so in the near future. Similar to launch ramps, transient or courtesy docks outside marinas also can be developed through

public collaborations as demonstrated by the Walnut Grove, Rio Vista and Isleton transient dock facilities.

Methodology for Determining the Magnitude of Capital Improvements Necessary to Replace, Upgrade, or Repair the Existing Inventory of Marinas

Estimating the types and quantity of marina capital improvements associated with the existing 90 marinas in the Delta over the next fifteen years required a clear methodology. Specific criteria were developed to apply the three basic improvement approaches previously described in this Chapter to the fifteen year forecasted facility needs of marinas. A matrix (see **Appendix 5-2**) shows three variables:

- Marina building materials
- Age of marinas
- Present observed condition of marinas

Marina building materials were classified by the type of floatation systems and specific material options. Marina facilities greater than 40 years old were given the lowest rating while those built within the last 20 years were ranked the highest. Finally, the observed condition of marinas was ranked from poor to excellent based on pre-established evaluative criteria. Facilities receiving the lowest aggregate ranking were deemed in immediate need of replacement, upgrade, or repair in order to bring the facility up to a satisfactory and safe condition. The next level of ranking includes facilities needing remedial actions by 2020. The detailed rating for each marina facility is shown in **Appendix 5-2**. Other factors were marinas that may be phased out because it is infeasible to bring them up to standard and/or the dredging requirements to keep them in operation are insurmountable.

Table 5-3 quantifies boat slip needs by Delta zone from 2005 through 2020. Finally, it is assumed that all marina facilities will require some level of improvement within the fifteen year strategy period.

Table 5-3 Number of Boat Slips in Need of Replacement, Upgrade, and Repair 2005 - 2020								
Delta Zone Boat Slips								
The Northern Delta Gateway	934							
The Bypass	117							
The Delta Hub	1,284							
The Delta Breezeway	6,421							
The San Joaquin Delta Corridor	2,218							
The Southern Delta Reaches	700							
Total	11,674							

Table 5-4 depicts the total number of marina boat slips in the Delta divided into five groups according to the number of boat slips. Distribution of boat slips among the three models reflects the number, size, and age of the 90 marinas included in the study. The three models developed in the SSJDBNA included all of the support facilities particular to marinas. Thus, when costs are derived from the three models, all support facilities and expenses, such as periodic dredging, are included in the projections.

Specific facility replacements, upgrades, and repairs are set forth in the models are as follows:

- Demolition of existing facilities to be replaced
- Dredging at marina entrances and under boat slips
- Walkways and marina slips with utilities
- Floating platforms for offices, bait and tack sales, gasoline sales, etc.
- Roads and parking major improvements
- Restroom major maintenance and improvements

Replacement, Upgrade and Repair Needs of Existing Delta Marinas

Table 5-4 provides a breakdown of the replacement, upgrade, and repair needs of the current inventory of 90 marinas. Costs associated with these needs are presented in Chapter 7.0.

	Table 5-4	
Existing Marinas Slip Replacen Group 1 – New Original Marina's	ent, Upgrade and	Repair Summary 2005 – 2020
Group 2 – Largest Marinas (400+ s	ling)	
Description	Number of Marinas	Number of Existing Slips
Total Replacement	0	0
Partial Replacement	2	1,350
Maintain or Upgrade	1	490
Repair to Maintain Status Quo	2	983
TOTAL Group 2	5	2,823
Group 3 – Large Marinas (200 to 3	99 slips)	
Description	Number of Marinas	Number of Existing Slips
Total Replacement	3	800
Partial Replacement	3	775
Maintain or Upgrade	6	1,586
Repair to Maintain Status Quo	2	437
TOTAL Group 3	14	3,598
Group 4 – Midsize Marinas (100 to	199 slips)	
Description	Number of Marinas	Number of Existing Slips
Total Replacement	2	260
Partial Replacement	4	491
Maintain or Upgrade	6	886
Repair to Maintain Status Quo	2	306
TOTAL Group 4	14	1,943
Group 5 – Small Marinas (50 to 99	slips)	
Description	Number of Marinas	Number of Existing Slips
Total Replacement	1	75

Table 5-4								
Existing Marinas Slip Replacement, Upgrade and Repair Summary 2005 – 2020								
Partial Replacement	1	40						
Maintain or Upgrade	4	145						
Repair to Maintain Status Quo	4	140						
TOTAL Group 5	10	400						
Group 6 – Smallest Marinas (1 to 49 slips)								
Description	Number of Marinas	Number of Existing Slips						
Total Replacement	2	60						
Partial Replacement	2	60						
Maintain or Upgrade	8	80						
Repair to Maintain Status Quo	2	10						
TOTAL Group 6	14	210						
Group 7 – Unresponsive Marinas	38	2,700						
Group 8 – Yacht Clubs (Deduct)	-5	0						
TOTALS	90	11,674						

Appendix 5-2 includes a detailed worksheet of the above summary.

5.3 Boating Demands Forecasts

Demand Forecast Overview

This sub-section presents updated boating demand forecasts, current and future, based on the *Sacramento-San Joaquin Delta Boating Needs Assessment* (SSJDBNA). These forecasts were developed beginning with estimates for the year 2000 annual and peak-day visitation. A combination of key trend variables and estimates for future visitation were developed for the fifteen-year period from 2005 to 2020. Peak-day demand figures were then applied against quotient standards to translate the estimated peak day demands into facility need estimates to accommodate visitation in the present and in the future.

Marina slip, dry boat storage, fuel station, and bilge pump-out station requirements for future years were each developed separately. A different methodology was used with the year 2001 inventory of facilities as the baseline to project future demand based on population growth. Order of magnitude costs are estimated for each deficient facility type and applied to

the projected levels of demand at the year 2020. Two analytical models are used to forecast future boating activity in the Delta: a Demand Model and an Econometric Model. The derivative projections include estimates for facility needs based upon annual boating visitor days and peak-days.

The following summarizes the methodology and findings pertaining to existing and projected demands for boating and boating-related facilities.

Methodology

Estimates for Delta visitation and boating trips are derived from survey data developed in the SSJDBNA study, other past surveys, and an econometric model prepared as a part of the SSJDBNA. The year 2000 was selected as the benchmark year for the SSJDBNA study. For the purpose of projecting demand for this Delta Recreation Master Strategy, this benchmark year has been moved forward five years to the year 2005.

Annual Visitor Days

Annual visitor days are the total number of days spent by boating parties on Delta waters within a given year.

- A range of 5.8 to 9.5 million annual boating-related visitor days was estimated for the baseline year 2000.
- For the purpose of this analysis, the baseline for visitation was established from the year 2000 data with a total of 6.4 million annual boating-related visitor days for that year. Both the Demand Model and the Econometric Model used in the study supported this visitation figure.

Annual Boat Trips to the Delta

Annual boat trips to the Delta are the total number of trips a boater takes to the Delta within a given year, regardless of length of stay.

In the baseline year 2000, there were:

- 1.98 million small-boat trips
- <u>..15</u> million large-boat trips
- 2.13 million total boat trips

Demand Trends Analysis

Multiple trends were examined, in order to determine a robust model for projected demands for recreation in the Delta. Five primary variables or trends are potentially the largest influences that affect future boating use in the Delta and involve trends or changes in:

Market area population growth and demographic characteristics

- Aggregate resources-related outdoor recreational preferences (DPR statewide data)
- Boat registration and ownership patterns
- Quality of the Delta resources and facilities
- Economic conditions

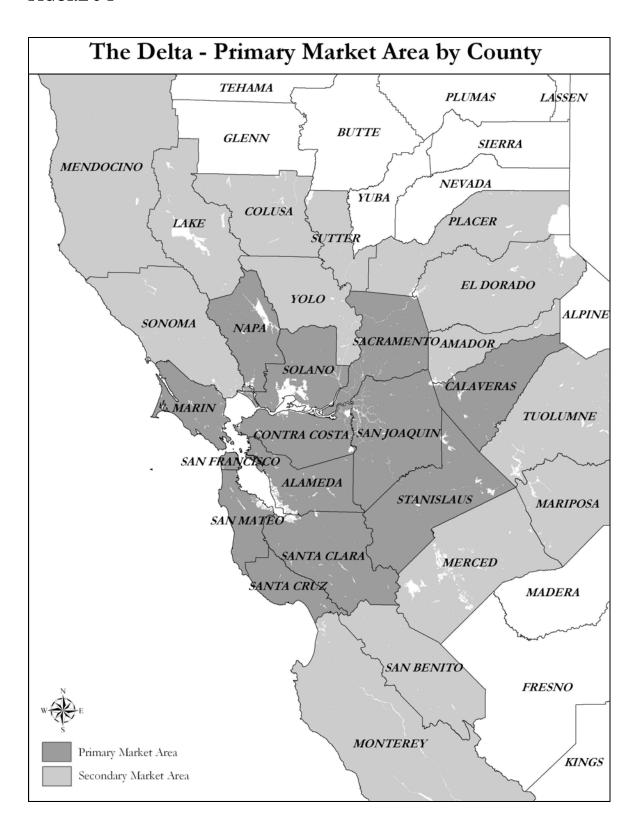
Primary recreation determinants were identified in each of these trends as summarized below.

Trend 1 - Population Growth and Demographic Characteristics

Key population growth-related trends noted in California Department of Finance statewide census data are applied to the population within the Delta's Primary Market Area (PMA). This area includes 13 counties contained in and contiguous to the Delta (see **Figure 5-1**). The following are the relevant population and demographic characteristics:

- Population within the state as a whole increased by 1.8 percent annually over the past 20 years, while population within the identified PMA increased by 1.6 percent annually during the same period. Population dynamics within the PMA are comparable to California at-large population dynamics.
- Seventy-five percent of the boat owners surveyed as part of the SSJDBNA reside within 75 miles of the Delta and within the PMA.
- Approximately 87 percent of the present boat owners using the Delta are between the ages of 40 and 75. Also, approximately 95 percent are Caucasian. This population segment has been identified as the Primary Boater Population (PBP).
- The PBP segment within the PMA is projected to grow from 1.06 million to 1.20 million people between 2000 and 2010 and then decline back to 1.14 million by 2020 for a net increase of 80,000 people by 2020.

FIGURE 5-1



Trend 2 - Delta Share of Total Outdoor Recreation Use

The California Department of Parks and Recreation (DPR) conducts outdoor recreation preference surveys every five years. Significant findings from the boating- and water-related recreation preferences from the 1992, 1997, and 2002 surveys are as follows:

- Since 1990, the total per capita resource-related outdoor recreation use in California increased at a rate of 0.4 percent per year higher than California's growth rate.
- Resource-related recreation preferences that are becoming more popular include visiting museums and historic sites, attending outdoor cultural events, nature-related activities, beach activities, picnicking at developed sites, trail hiking, power boating, mountain biking, kayaking, rowing, canoeing, and swimming in lakes, rivers, and the ocean.
- Resource-related preferences that are flat in growth (no increase) include open grass turf use, developed camping, bicycling, primitive camping, and hunting.
- Declining resource-related preferences include sailing, windsurfing, fishing, and water-skiing.
- The DPR findings suggest that boating activities in California have not kept pace with population growth since 1992.

Trend 3 - Boat Registration and Ownership Patterns

The information below is derived from the combined Department of Motor Vehicles and United States Coast Guard (Documented Vessels) registration information for boats registered in California. **Table 5-5** outlines the growth of registered boats in California.

Table 5-5 Boat Registration and Ownership Growth									
Annual Boat Ownership Growth	1981-2000	1990-2000							
Small-boat < 26'	2.61%3	1.46%							
Large-boat > 26'	2.72%	2.88%							
Total boat growth	2.62%	1.56%							
Total CA Population Growth	1.80%	1.30%							
Boat Population Growth	N/A	1.93%							

³ Significantly, within the total number of registered boats in California, PWCs account for 80 percent of the increase between 1990 and 2000. In the year 2000, PWCs comprised a total of 19 percent or 175,226 of the total 925,533 registered boats in the state, suggesting that the

proportional share that PWCs represent of the total number of registered boats in the state has slightly declined

Trend 4 - Quality of Delta Resources and Facilities

The most challenging variable is the influence of the Delta resource itself on existing and future boating use. CALFED programs could change this influence in a variety of ways. (CALFED proposed actions are addressed in Chapter 4.0.) This study considers the assortment of proposed CALFED actions into two primary categories: (1) actions adding value to the quality of the Delta boating experience, and (2) actions that can further limit or diminish that experience.

Trend 5 - Economic Conditions

Economic indicators within the PMA are viewed as neutral based on the observation that the leading indicators tend to balance or cancel out disparate influences. Economic influences on boating use are perhaps most evident in the higher growth rate of registered boats (large boats) when contrasted with the general growth in population.

Projected Demand Models

Six projected-use models provide a probable range of annual visitor days that can be evaluated. The models test different projected visitor rate scenarios, characterized as follows:

- Model 1-Composite of all Models
- Model 2-Population Variable Model
- Model 3-Boat Registration Growth Versus Population Growth Model
- Model 4-Enhanced Delta Resource Based Model
- Model 5-Combined Variables Model
- Model 6-Econometric Model

Based upon an analysis of five primary variables contained in the first five models above and the findings of the econometric model presented in Model 6, annual boating visitation use will increase at the rate of .79 percent per year from 2000 to 2010, and at the rate of .46 percent per year from 2010 to 2020. The slowing down of the annual growth rate in the later period is the result of the "baby boom" bulge moving through the primary boater population age group. Since the primary boating public consists of caucasion men from age 40 to 75, a decrease in the rate of growth in annual boating visitation is expected to occur after the year 2010 as the "baby boomers" move out of the active boating years. In addition, there is an assumed lesser boating interest in the younger cohort groups. Taking these variables into consideration, the annual visitor days are projected to grow from 6.4 million

in 2000 to 8.1 million by the year 2020 (an increase of 1.7 million visitor days).

Facility Deficit Estimates

Facility need estimates were developed for the period 2005 to 2020. Projected demand forecasts based on visitor estimates were applied to baseline data of existing facilities as described above in Section 5.2. This analysis forecasts demand for facilities by weighing projected visitation against industry standards for those facilities. Deficiencies are evident in most facility categories in the year 2020. Findings from the needs analysis are compared with facility needs information obtained through prior survey outreach with users and marina operators. The facility deficiencies identified in this analysis, as matched with the user and marina operator survey information, help substantiate the general findings regarding facility needs. **Table 5-6** provides a thumbnail overview of anticipated facility deficiencies based on projected boating needs from 2005 to 2020.

Table 5-6 Facility Deficiencies							
Facility	Estimated 2020 Deficiency						
Covered Boat Slips	2,050						
Uncovered Boat Slips	880						
Boat Launch Lanes	90						
Vehicle with Boat Trailer Parking Spaces	1,970						
Transient Dock Tie-Ups (Public and Private)	135						
Restroom Stalls	185						
Shower Stalls	90						
Fuel/Pumping Stations	15						
Dry Boat Storage Facilities	465						

Delta Boating-Related Forecast of Facility Requirements, Years 2005 through 2020

Table 5-6 displays the number and type of additional facilities that will be needed to accommodate existing and future boating-related demand in the Delta. These figures are derived by combining growth projections with the projected 2020 deficit in boating-related facilities. A review of this table shows clear deficits for a variety of facilities as described below.

Specific Aquatic Facilities and Infrastructure Demand Estimates

New Boat Slips

Using the forecasted increase in visitation as a guide, the number of boat slips should rise from the current estimated 11,674 slips to 14,604 by 2020. Some of these slips will be additions, some replacements, and some absorbed in the development of two projected new marinas. The majority of slips will be large and covered. Future demand for small boat storage will be accommodated by dry stack and boat trailer storage in lieu of wet storage capacity that will continue to shift in favor of large boats. An inability to match demand for future small-boat slips is influenced by a trend to convert small-boat slips to slips that will accommodate larger boats. The Delta appears to have a lower percentage (26%) of small-boat slips compared with other parts of the state. The present trend of converting small-boat slips to larger slips will continue over the next fifteen years, reducing the percentage of small-boat slips from 26 percent to approximately 10 to 15 percent of the total Delta boat slip volume by 2020.

Based on observations during the field investigations and surveys of the Delta marina facilities, marina slips for the large-boat category are occupied from 85 percent to 95 percent of the year, while slips for the small-boat category are generally season based and occupied from Memorial Day to Labor Day. This estimate corresponds with the expressed desire of marina operators to either upgrade existing small-boat slips or expand the marina to build additional slips for boats over 26 feet in length. The demand for additional boat slips in the year 2020 is forecasted to be 2,930. This includes 2,050 covered slips and 880 uncovered slips. The estimate for covered boat slips assumes that 70 percent of new boat slips will be covered. This assumption is based on marina survey findings that the majority of demand for new slips appears to be for large boats with covered slips that enable large-boat owners to leave their boats in slip-storage year-round.

New Marina Related Parking Spaces

Demand for marina-serving parking spaces was projected using a design standard of 0.6 spaces per boat slip. This standard includes parking for boat

owners and guests as well as day users who visit the marina and was derived from the *DBW Handbook*. Parking and other landside related structures will be addressed in the Terrestrial (Phase Two) portion of this strategy.

New Boat Launch Lanes

Based on findings from the CBFNA that identified the Delta region as comprising 18% of the state boating facilities but only 5% of the State's inventory of launching facilities, there is a significant deficit for launch ramps in the Delta. This need is exacerbated by the regional extent of the Delta which would be served better by multiple well distributed launch facilities rather than centralized larger facilities. Needs for boat launch lanes are projected on the basis of the number and percentage of survey respondents who said they launch their own boats when they boat in the Delta. Of this group, all were small-boat owners. The standard of one boat lane for 40 boats launched per day per lane was used for this study. This standard is based on an average range of 30 to 50 boats per lane per day as listed in the *DBW Handbook*. Using this standard, there will be a deficit of 92 boat launch lanes by the year 2020.

New Vehicle/Boat Trailer Parking Spaces

A standard of 0.6 parking spaces per boat launch/retrieval per day was used to ascertain the required vehicle/boat trailer parking spaces. Parking and other landside related structures will be addressed in the Terrestrial (Phase Two) portion of this strategy.

New Transient (Courtesy) Docks

Survey respondents indicated a high demand for additional transient dock tie-up spaces. A standard was developed through analyzing these data and determining the number of slips required to service the boats in operation on a peak-day. The standard for marina tie-ups on the peak-day was determined to be one tie-up per 36 boats in use. This standard also takes into consideration the desire of boaters (particularly cruisers) to be able to boat to different destinations on day trips in order to engage in various land-based social activities, including entertainment, visiting restaurants and other points of interest. Also taken into consideration in determining an estimate number are the non-marina associated transient dock facilities that can be developed through other public facility providers. For the purpose of this study, a tie-up at a transient dock is considered at an average of 30 linear feet of dock space. Using this methodology, 135 additional transient dock tie-ups will be needed to meet the demand for the year 2020.

Another variable affecting the potential number of new transient dock facilities is the full access stipulation spelled out in the Americans with Disabilities Act of 1990 (ADA). The development of ADA facilities is a requirement of major capital outlay investments and of more comprehensive re-development and new aquatic facility projects.

New Restroom Stalls at Marinas

Restroom stall needs are projected at a design standard of one fixture per 30 visitors. This standard is based on interpretation of various county-based environmental health department standards. This standard takes into account separate sex and unisex restrooms and an approximate number of fixtures that might be located at each site in the Delta. For the purpose of this study, restroom size is approximated to meet minimum health department standards at each facility based on the number of campsites, day-use type picnic sites, and marina slips accommodating boats without sanitation hookups. An estimate of the share of total boats using the Delta that have sewage holding tanks aboard was also used in making this determination. Based on this standard, there will be a need for 187 additional restroom fixtures to meet the demand for the year 2020.

New Shower Stalls

Future needs for shower stalls at marinas were projected from the baseline inventory of 384 units at the rate of 1.3 percent increase for the 20-year period. This increase is the probable rate of increased visitation, as stated on page 6-12 of the SSJBNA. Using this methodology, 89 additional shower stalls will be needed to meet the demand for the year 2020.

New Fuel/Pumping Stations

Fuel dispensing along with sanitation pumping, bilge pumping, and disposal of oil are all services that are provided at a "fuel dock" on a marina. For this reason, these services have been combined into one facility, based on fuel station demand. This supposition approximates the same growth rate as all the classes of registered boats that would likely utilize this service, based on the 1995 to 2000 actual DMV and Documented Vessel annual boat registration growth rate of 1.2 percent per year. (1.2 percent x 20 years = 24 percent increase total). Based on this analysis, 14 additional fuel/pumping stations will be needed to meet demand in 2020.

New Dry Boat Storage Facilities

Sufficient facilities accommodate 5,542 dry storage spaces in the Delta and typically store small boats. In order to project demand for future dry storage, the classes of boats that are candidates for dry storage and registered in 1995

and 2000 were identified as shown in **Table 5-7.** The growth rate for these DMV and Documented Vessel registered boats from 1995 to 2000 was .42 percent per year. This growth rate was then applied to the years 2001 through 2020 (.42 percent x 20 years = 8.4 percent). Using this methodology, 466 additional dry boat storage spaces will be needed to meet the demand for the year 2020. Based on marina surveys, 17% of the current dry storage spaces are dry stack. Since dry boat stack storage is currently the preferred type of dry boat storage among marina owners and small-boat owners interviewed, this study estimates costs based on dry stack storage type development.

Changing Recreation Preference Demands

Meeting aquatic recreation needs requires keeping pace with changing trends in personal preferences and changing social patterns. Facility operators must respond to aquatic facility up-keep needs and predictable capacity-related changes in demand, along with changing recreational preferences. Boat types are not a constant, changing over time according to industry, technology, specific activities they are designed to accommodate, Americans with Disabilities Act (ADA) compliance, changing regulations, or changing style preferences. The facility operator survey showed that operators anticipate a proportional increase in the number of larger boats using Delta waters and facilities. But "larger" can include length, height, width, and draft. These variables change potential capacities, costs, and actual dimension for boating facility design. Engine and fuel characteristics are also evolving and are affected by industry trends, legislative statutes, changing activity patterns, and changing technology. Preference demand is difficult to account for in quantifying improvements for the Delta. The aquatic facility operator ultimately has to take chances when making commitments for investments because there will always remain some unforeseeable factor that makes meeting real demand guesswork rather than science.

Table 5-7 California Boat Registration Trends												
	Actual 1981	Actual 1985)	Actual 1990	Actual 1995	Actual 2000	Year 2000 Percent	Annual Growth Number	Annual Growth Rate	Annual Growth Number	Annual Growth Rate	Annual Growth Number	Annual Growth Rate
	(000's)	(000's)	(000's)	(000's)	(000's)	Boats	81 - 00	81 - 00	90 - 00	90 - 00	95 - 00	95 - 00
Boats Under 26 Feet												
DMV Registered Boats												
Canoes	1	1	1	1	1	0	4	.037%	-14	-1.14%	-19	-1.55%
PWC	8	20	68	114	175	0	8,818	17.88%	10,744	9.96%	12,317	9.05%
Power Boats	433	491	585	613	605	0	9,026	1.77%	2,014	0.34%	-1,713	-0.28%
(incl. Pontoon & House boats)												
Sail Boats	54	56	54	49	43	0	-560	-1.16%	-1090	-2.24%	-1,149	-2.48%
Row and Other Hand Propelled Boats	15	17	17	16	15	0	-21	-0.14%	-199	-1.25%	-293	-1.87%
Other DMV Registered Boats	16	17	19	20	20	0	227	1.27%	141	0.72%	-2	-0.01%
Sub total DMV Registered Boats	527	603	743	813	859	0						
Documented Vessels				185	326	0.04%	N/A	N/A	N/A	N/A	28	12.00%
<u>Total Boats Under 26 Feet</u>	527	603	743	814	859	93%	17,511	2.61%	11,628	1.46%	9,169	1.10%
Total Boats Under 26 Feet w/o PWC	519	582	675	700	684		8,693	1.46%	884	0.13%	-3,148	-0.45%
Boats 26 Feet or Over												
DMV Registered Boats												
Canoes	0	0	0	0	0	0.00%	0	-1.50%	0	11.61%	0	0.00%
PWC	0	0	0	0	0	0.00%	0	N/A		0.00%		N/A
Power Boats	26	29	31	29	28	43.09%	146	0.54%		0.00%		-0.19%
(incl. Pontoon & House boats)												
Sail Boats	13	15	17	15	14	21.04%	46	0.34%		0.00%		-1.52%
Row and Other Hand Propelled Boats	0	0	0	0	0	0.07%	1	2.93%		0.00%		2.90%
Other DMV Registered Boats	1	1	1	1	1	1.85%	16	1.47%		0.00%		1.03%
Sub total DMV Registered Boats	40	46	50	45	44	66.05%				0.00%		
Documented Vessels				16	22	33.95%		N/A	N/A	N/A	1,207	6.47%
<u>Total Boats Over 26 Feet</u>	40	46	50	61	66	7%	208	2.72%	-611	2.88%	947	1.50%
All Boats												
DMV Registered Boats												
Canoes	1	1	1	1	1	0.12%	4	.036%	-14	-1.12%	-19	-1.55%
PWC	8	20	68	114	175	18.93%	8,818	17.88%	10,744	9.96%	12,317	9.05%
Power Boats	459	521	616	642	633	68.41%	9,172	1.71%	1,690	0.27	-1766	-0.28%
(incl. Pontoon & House boats)										5		
Sail Boats	67	71	71	64	57	6.14%	-514	-0.83%	-1,395	-2.17%	-1370	-2.25%
Row and Other Hand Propelled Boats	15	17	17	16	15	1.61%	-20	-0.13%	-198	-1.24%	-292	-1.85%
Other DMV Registered Boats	17	18	20	21	22	2.32%	243	1.28%	157	0.76%	10	0.05%
Sub total DMV Registered Boats	566	648	793	858	903	97.54%	17,702	2.48%	10,985	1.31%	8,881	1.01%
Documented Vessels						2.46%	N/A	N/A	N/A	N/A	1236	6.54%
<u>Total All Boats</u>	566	648	793	875	926	100.00%	18,900	2.62%	21,696	1.56%	18,998	1.13%
Total All Boats excluding PWC	559	628	725	761	750		10,082	1.56%	11,225	0.34%	6,680	-0.29%
California Boater Population (000's)	2,883		3,029		3,584		37	1.15%	55	1.69%		
Avg, No. Boats Per 1,000 CA Boaters	193.8		239.4		209.4		273.0		202.5			
Total California Population (000's)	23,668		29,760		33,872		537	1.90%	411	1.30%		
Avg. No Boats Per 1,000 CA Pop	23.6		24.4		22.2							

5.4 Other Recreational Facility & Feature Needs Including CALFED Related Recreation Elements

This section describes the range of recreation needs and improvements that are outside the venue of either private operator and/or private public collaborations. These needs are considered essential to the success of individual private operator-related improvements outlined above. For example, the array of improvements associated with CALFED actions are an important part of the long-term success of Delta aquatic recreation. Ensuring that these actions not only maintain the net balance of recreation opportunity in the Delta but also accommodate other identified recreation needs in the process is critical in assuring the long-term viability of aquatic recreation in the Delta. Similarly, dredging, aquatic weed management, and removing submerged obstacles or other impediments required beyond the confines of individual boating facilities are operation and maintenance actions crucial to a viable aquatic recreation environment. In order to isolate these other recreational facility and feature needs, this study revisits the specific anecdotal responses captured in the statewide surveys carried out for the SSJDBNA. In reviewing these responses, this study focuses on those comments that characterize needs and improvements that fall outside of the private operator's purview and therefore would not be addressed as improvements to private marina facilities. This information provides a portrait from the user perspective of missing or deficient facilities and further substantiates the range of improvement actions described in Chapter 6.0.

Needs Based on CALFED Actions

CALFED started in 1995 as a collaborative effort between state and federal agencies. The goals of this multi-agency collaboration were to produce a programmatic environmental document to identify and analyze the impacts of comprehensive ecological restoration in the Delta and to improve beneficial uses of the estuary's waters. Lead federal agencies included the Bureau of Reclamation, Fish and Wildlife Service and the Environmental Protection Agency. State efforts were lead by the Resources Agency, the Department of Water Resources and the Department of Fish and Game.

The details of the CALFED plan are described in a Programmatic Environmental Impact Statement/Environmental Impact (EIR/EIS) report issued in July 2000. CALFED's commitments regarding active implementation of the plan are described in the Programmatic Record of Decision (ROD) and associated CALFED agency implementation agreements. Major program elements of CALFED's final plan include:

 The Ecosystem Restoration Program which will restore floodplains and tidal wetlands, acquire water for in-stream flows and Delta

- outflows, improve fish passage and implement other actions for endangered species, habitats and ecosystems.
- The Environmental Water Account designed to reduce endangered species take at state and federal water project pumps.
- A Water Use Efficiency Program to promote urban and agricultural water conservation and recycling.
- Expansion of water storage capacity in the Delta.

The ROD specifically describes ten possible effects implementation of the plan might have on recreation. These include:

- Temporary closure of recreation areas during construction;
- Decreases in recreation opportunities and increases in boat traffic;
- Stringent enforcement of boat discharges;
- Temporary or permanent changes in boating access navigation;
- Permanent closure of recreation facilities;
- Potential decrease in flooded lands suitable for wildlife, hunting, and fishing;
- Reduced water-contact recreation;
- Displacement of fish and wildlife;
- Potential for reduced access to recreation facilities and decreased opportunities, and
- Potential short-term construction effects of dredging.

The CALFED Bay-Delta program focuses on the interrelationships between the problems and searches for solutions that address multiple issues in the region. The projects and actions described in the plan are expected to have a significant impact on the quality and extent of water-based recreation in the Delta. Even though recreation is a significant function of the Delta, the programmatic EIS/EIR identifies it as a resource rather than a program element. This means that CALFED projects must consider the impacts individual projects might have upon recreation. This, at least, opens the door for mitigation measures to include components to improve recreation opportunities within the Delta.

Summary of Sacramento – San Joaquin Delta Boating Needs Assessment User Needs Survey Related to Facilities and Improvements

Findings pertaining to facility preferences conducted for the 2002 SSJDBNA study were divided into two categories:

- Preferences of owners of larger boats (over 26 feet)
- Preferences of owners of smaller boats (less than 26 feet)

The two general groups are categorized by the type of boat and the type of activities they engage in. In general, the two user categories are similar in the sense that they are both resource-based recreation enthusiasts. Based on

preference responses, the most common denominator is the expressed need for good or adequate water quality and the overall aesthetic quality of the region. These boater respondents also tended to be relatively happy with the status quo, which may reflect in itself an attribute: the allure for many boat recreationists who use the Delta may be its relatively primitive and unpretentious character.

Beyond the commonalities of water and aesthetic quality, the differences become more apparent between the two boating categories. The larger boat users spent the greatest amount of time "cruising" the Delta – navigating from one point to another, whereas the smaller boat user is more focused on associated activities such as fishing, waterskiing, wake boarding, picnicking, and camping. The larger boat based enthusiast is apparently more self-contained and less dependent on general services and/or support facilities. The larger boat user also tends to look for more landside-related activities such as dining at restaurants, shopping, attending events, hiking/walking, and general sight-seeing.

Figure 5-2

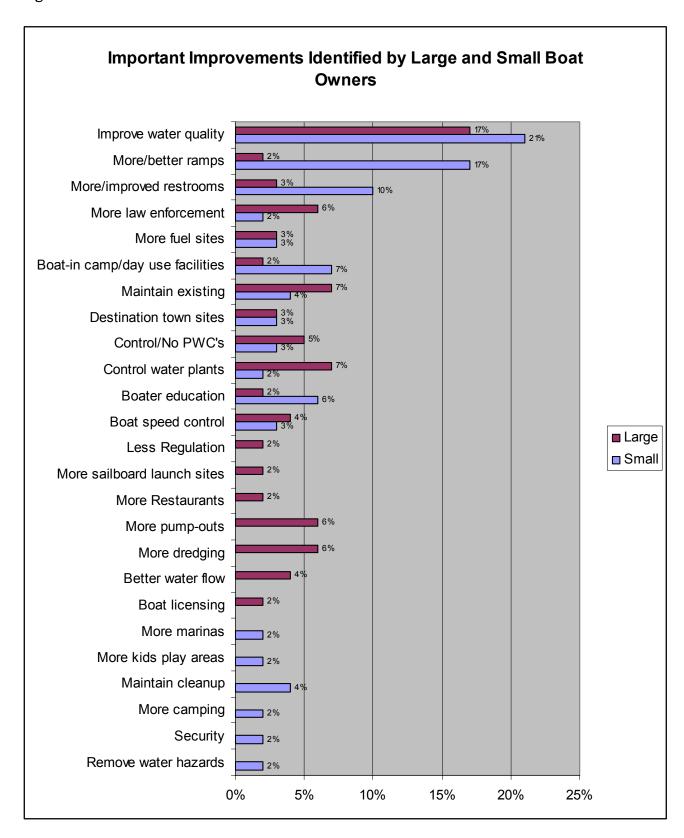


Figure 5-2 modified from the SSJDBNA Study helps demonstrate improvement priorities for each of the surveyed groups. Sorting the two improvement lists assists in evaluating which improvements should be considered within the private facility provider role versus a public or other provider role. For the larger boat group, more pumpouts, more or improved restrooms, more fuel sites and perhaps more restaurants could fall under the private provider responsibility. However, the primary needed improvements identified by this group were not private operator managed items. These identified needs include improving water quality, controlling aquatic weeds, more law enforcement, more dredging, controlling PWCs, and more destination town sites, boat-in day use areas, and restaurants. Similarly for the smaller boat owner improvement ranking, the primary improvement categories were improving water quality, more or better launch ramps, more or better restrooms, more day use facilities (such as Westgate Landing), better boater education, general clean up, and more fuel sites and destination town sites.

For both survey groups, these identified improvements were selected from a list created for the survey. In order to isolate specific needs and preferences for improvements, this study needed to evaluate the annotated section of user surveys. The specific improvement-related comments were sorted by the suggested improvement weighted toward those ideas that could help serve as a basis for improvement concepts for this strategic plan. The survey annotation tables are shown in **Appendix 5-3**.

In the large boat owner category, water quality improvement stands out as the most cited single improvement. Improved or enhanced law enforcement followed by general operations and maintenance improvements were also high on the improvement priorities. In addition, emphasis on environmental enhancements suggests that the overall character of the Delta is a very important part of the boating experience. Dredging, aquatic weed control, and submerged objects and debris control were the most cited operations and management improvements. Several comments pertained to better information about the Delta including directional, safety, and general information about attractions. A unique concern is to ensure that Delta waters do not become saline.

Specific new or improved facilities that fall outside the venue of the marina operator include:

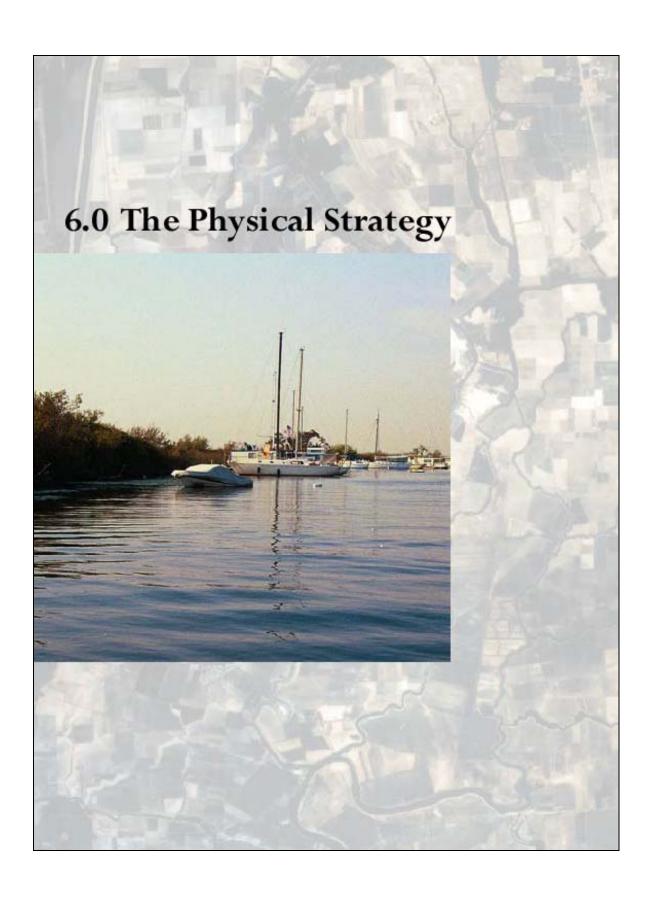
- New transient or courtesy docks for access to restaurants, events and other Delta landside resources;
- Boating exclusive parks: more Delta Meadows-type destinations;
- More or improved tie-up (overnight) facilities;
- Floating restrooms;
- More restaurants in general;

- More destinations in general;
- More guest slips;
- Improved shore access for hiking/walking;
- Improved wildlife habitat;
- No charge for pump-out facilities;
- More resorts as destinations and extended stay venues; and
- Don't make the Delta into a sanitized "theme park."

Comments in the smaller boat owner category mirror those made by the larger boat survey group with water quality standing out as the single most identified subject for improvement. The dilemma for level of enforcement, user conflicts, and too many restrictions were also cited as a high areas of need. Dredging and weed control were less cited, which may reflect the nature of smaller craft – more agile and able to adjust to the varied conditions in Delta waters. Environmental enhancement was also high with this group but, unlike the larger boat owners, this group was generally more concerned with activities such as fishing, swimming, or other body contact activities. Operations and maintenance concerns were also high with this category of boaters. This group was concerned about too little information and signage needed for directional, safety, and general amenity-related information. More launch ramps – public and low cost – were by far the principal items identified as specific facility needs. Other specific new or improved facilities that fall outside the venue of the marina operator for this category include:

- More campgrounds (with launch ramps);
- Boat-in destinations day use;
- Restaurant destinations;
- Better security for parked or stored equipment;
- More fuel stations that are easily accessible;
- Integrated marina camping facilities with safe over-night parking;
- More restrooms;
- Overnight destinations;
- Floating restrooms;
- More pump stations;
- More places like DPR's Brannan Island SRA and Decker Island;
- Better Delta Cross Channel management;
- More entertainment venues such as recreational parks and museums;
- Family-oriented picnic sites;
- More day use areas for kids;
- Call boxes for emergencies;
- Specific PWC launch ramps;
- More general retail services, and
- More places like Old Sacramento and Garden Highway Access.

Aquatic Necreation Component of the Delta Necreation Strategy Fian		
See detailed survey information in Appendix 5-3.		



6.0 THE PHYSICAL STRATEGY

Summary Points

- The Delta offers a mix of privately operated facilities, public facilities and areas, boating trails, aquatic recreation-serving infrastructure, parks, and open space. This strategy identifies additional elements to respond to future demands, to enhance the overall recreation experience, and to create and reinforce regional identity and an awareness of the Delta resource.
- Delta recreation requires a strategy, a master strategy, to enhance resources and to improve or add recreation facilities that will meet future needs. A longrange vision will benefit the Delta and the users: meet boating needs, add recreation opportunities, and maintain the character that makes it a unique and popular resource.
- The Delta, a complex ecosystem, covers a large area within many jurisdictions and is subject to a variety of interests. This complexity makes it difficult to understand the resource, the regulations, and the needs. This strategy presents a framework to conceptualize the area in terms of place, recreation, and function, and then converts this framework into a map.
- Enhancements are recommended to benefit overall Delta aquatic recreation and improve specific zones. Delta aquatic recreation will be enhanced by constructing: transient/courtesy docks, beach/day-use facilities, day-use opportunities at barrier structures, boat-in campgrounds and day-use sites, boat-in beach sites, campgrounds, access and day-use sites for non-motorized aquatic uses including kite- and windsurfing, buoy field sites, and floating restrooms.
- The majority of private facility improvements are recommended in the Delta Breezeway Zone (West Delta), for this area has the greatest share of facilities. Significant improvements are also anticipated in the Northern Delta Gateway, Delta Hub, and the San Joaquin Delta Corridor.
- Improved signage, (directional, safety and interpretive), and other identity devices will help visitors to understand and appreciate the Delta, its unique resources, and special projects.
- The Delta Conceptual Recreation Strategy, (color insert), is illustrated within the context of private-public land ownership, jurisdiction boundaries, physical features and infrastructure, as well as existing recreation facilities and sites.
- Specific recommendations for strategy components within each Delta zone are made and include: gateways, transient facility sites, windsurfing sites, waterskiing sites, boat-in destination sites, non-motorized boat trail areas, and enhanced wildlife/habitat areas.

6.1 Background

The Delta is a popular and dynamic recreation area offering a mix of landside and waterside privately operated facilities, public facilities and areas, boating trails, aquatic recreation-serving infrastructure, parks, and open space. This strategy builds upon these existing facilities and resources adding elements that respond to and anticipate future demand projections. The strategy also presents ideas for new elements that will enhance the overall recreation experience and better define the Delta as a recreation environment. These added elements include features that can reinforce a regional identity and define, manage, and market recreational opportunities. Other elements improve specialized use areas, assist in traveling the waterways, link different use areas, and enhance the overall recreation experience in the Delta. A key finding from the preference survey work carried out for the 2002 Sacramento San Joaquin Boating Needs Assessment is that many boaters like the Delta just the way it is. The Delta already has an obvious appeal as a boating recreation area and, consequently, recommendations acknowledge that the Delta character must be preserved.

Absent a strategy, the Delta will continue to serve as a recreation destination. The ability to accommodate recreation will be subject to various resource and State infrastructure demands (described in Chapter 4) that may sometimes conflict, but will certainly become increasingly evident. Consequently, this strategy identifies elements to enhance overall function and summarizes recommendations applicable to the multiple private enterprises operating in the Delta, and presents a framework for the various public agencies and interests that have jurisdictional and/or regulatory roles in the Delta.

Chapter 4 documents the planning context, describes existing recreation in six recreation zones within the Delta and summarizes recreation-related opportunities and issues.

Chapter 5 assesses the condition of private marina facilities in reference to estimated levels of deferred maintenance, probable scenarios for improvements, and future public demand for these recreation facilities based on trend projections. From these projections, specific improvement needs are listed by facility or infrastructure type, and then by geographic distribution within the Delta Zones. Chapter 5 describes other identified improvement needs not within the responsibility of private facility operators. All of this previous information is the foundation for the physical strategy described in this chapter (Chapter 6).

6.2 Vision

The following vision statement distills many ideas, concepts, and preferences that contribute to a long-range vision for recreation in the Delta. The vision is partitioned by the specific roles and responsibilities as borne by the recreation facility providers and the key stakeholder public interests that have a stake in the future of recreation in the Delta. This strategy envisions a future for Delta aquatic recreation enthusiasts offering:

- A Delta regional identity with gateway points and other features, such as signs, that announce the key entry points into the Delta from both land and water access ways;
- A system of convenient access points and launching facilities distributed throughout the Delta region and located with respect to population centers surrounding the Delta;
- A coherent system of unimpeded boating trails that interconnect points of interest with intriguing routes and accommodating different modes of boat vessels including sailboats, motorized and non-motorized vessels and craft;
- A system of signs that reinforces regional identity, provides directional information, safety and hazard information for boaters, and general information about points of interest and natural and cultural resource interpretation;
- Sufficient and well-maintained boating facilities for boat storage that are well distributed throughout the region;
- A variety of destination points that include options based on existing natural, historic, and other points of interest in the Delta, including transient docks, boat mooring areas, or boat-in day-use or overnight facilities;
- A well-defined urban interface for aquatic recreation that ensures that new development in the Legal Delta fully accommodates potential aquatic recreation opportunities;
- A well-maintained system of waterways safeguarding against existing hazardous conditions such as sediment accumulation, submerged obstacles and invasive aquatic plant controls;
- Destination opportunities located on publicly owned lands to reduce intrusions on privately own lands; and
- Opportunities for partnerships between public and private interests and local, state and federal interests to ensure that developed facilities and infrastructure are suitably funded and well maintained.

This future for the Delta provides places for the public to enjoy activities that are in high demand with a strong connection between land resources and waterside routes and facilities. Recreation uses and natural areas are

balanced by careful, context-sensitive design and management. Specialized recreational use areas are well-defined and expanded to include both active sport areas such as water-skiing, wake-boarding, PWC uses and the various wind-based recreational sports, as well as the more passive non-motorized use areas such as trails for canoeing, kayaking, and other paddle craft. Finally, this future includes and relies on an entity to assume a region-wide overview role – perhaps continuing and expanding the existing role of the RCAC – with respect to aquatic recreation in the Delta, to guide the various required partnerships and to ensure an appropriate level of resources and funds to fully implement and carry through with the actions identified in this strategy.

6.3 Deltawide Strategy Elements

First time visitors to the Delta tend to become easily disoriented and sometimes uncertain about where the Delta is, where they might be within the Delta, and where they want or need to go: it is confusing. From the road it may be difficult or impossible to see the water, and from the water, because of the levees, it is often impossible to see the land. A key component to this strategy establishes or re-enforces a regional identity and sense of place for the Delta as previously articulated in the 1994 DPC **Recreation and Access Study.** The study established a conceptual framework to help organize the Delta's inherent complexity. The framework incorporates four basic principles to approach the Delta as a unique geographic region:

- Nodes
- Edges
- Connections or links
- Hierarchy

Viewing the Delta with this conceptual framework defines physical boundaries of the Delta and describes recreation functions according to their optimum compatibility with other recreation functions and with the local environment.

- <u>Nodes</u>: The nodes serve as anchors for activity. They relate to (a) existing points of public congregation in the Delta, and (b) locations that are potentially conducive to higher levels of use.
- <u>Edges</u>: The Delta is often perceived as boundless. Adjoining land uses are in the process of redefining the character of the Delta's surrounding landscape. Edge definition will be useful in defining the limits of the Delta's unique landscape as well as in articulating the different use areas within the greater Delta region. Defined edges will also help demarcate the boundaries of specific features and/or use areas.

- <u>Connections or linkages</u>: Connections or linkages are the defined pathways and links between Delta resources, infrastructure, and facilities. Geography is only one of the determinants in establishing linkages. While proximity is an important variable, the compatibility/incompatibility between nodes is a significant factor. Less tangible factors such as water depth, presence of water hazards, or current flow help define what is optimum or feasible for connections between the Delta nodes.
- <u>Hierarchy</u>: Hierarchy helps define and reinforce structure for the strategy by segregating the functions of uses into a network with different levels of scale that are self-organized, such as a road hierarchy of arterial, major collector, collector, and local streets. Creating a hierarchy within the context of Delta recreation looks at the area from the perspective of specialized use areas and identifiable intensities of use to articulate recreational use areas and sort potentially conflicting activities.

Gateways

Figure 6.1 displays conceptual locations for possible Gateway features that would announce entry into the Delta region from the major roads surrounding the Delta. Gateways are envisioned as a combination of signage, information kiosks and/or information additions to other interpretive or education facilities such as the Delta Science Center at Big Break or the Pacific Flyway Center in Yolo. Comparable gateways are suggested for the major water portals to the Delta – principally at the East Bay gateway cities of Pittsburg and Antioch, the City of Sacramento vicinity and at the Port of Stockton.

Conceptual Framework Strategy

Figure 6.2 displays a Conceptual Framework Strategy consisting of existing activity "nodes," the primary aquatic links between the nodes, and the urban edge zones where aquatic recreation should support development opportunities. The conceptual overlay re-enforces existing activity centers with a system perspective that defines a cohesive collection of places and access routes to simplify wayfaring, enhance safety, and draw greater interest to the diversity of Delta resources.

Figure 6-1

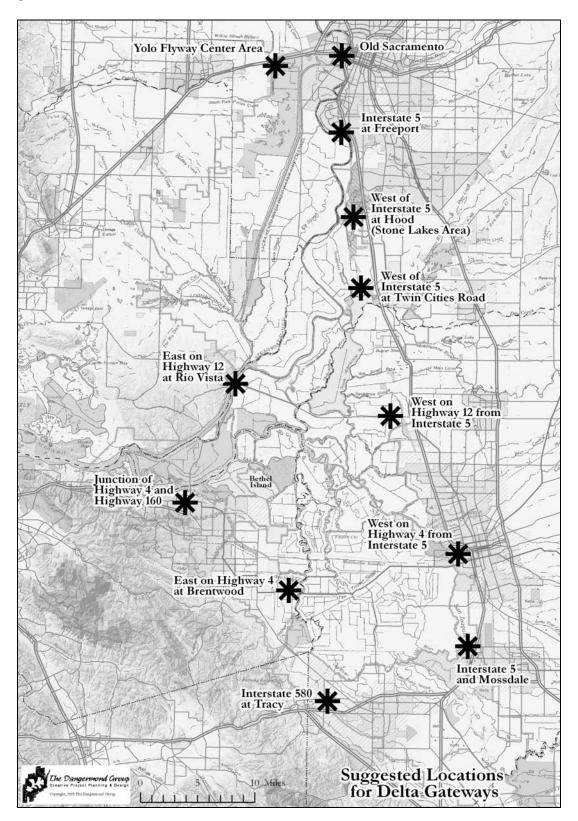
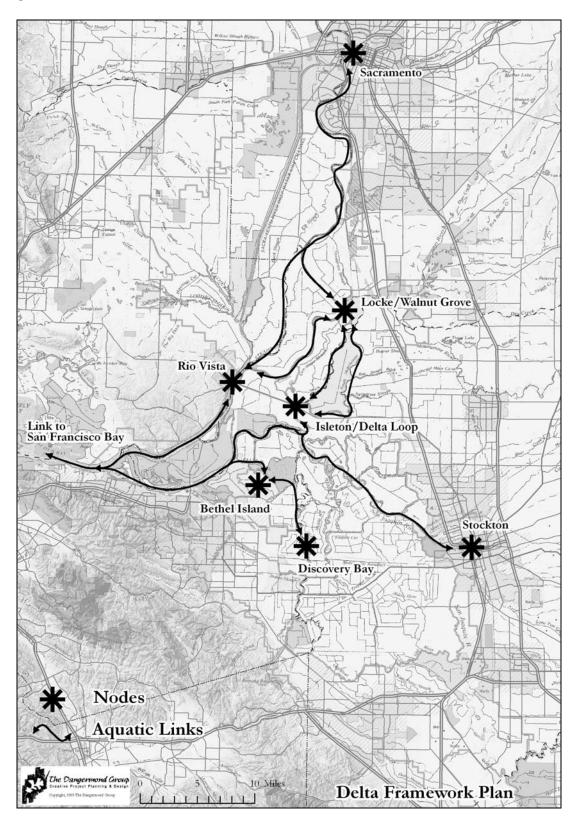


Figure 6-2



Deltawide Signage

Four components comprise the signage program for the Delta:

- Identity and image signage
- Directional/wayfaring signage
- Interpretive/educational signage
- Safety and hazard signage

The signage program should reinforce a regional identity for the Delta, direct the public to appropriate use areas, present and interpret various Delta resources, explain recreational opportunities, warn recreation enthusiasts as to potential hazards and risks, and help to manage the diverse mix of Delta aquatic recreation activities.

- <u>Identity and image signage</u>: Identity signage should include a unique logo or icon to represent and re-enforce an overall identity for the Delta and to announce or convey boundaries and special features in the Delta.
- <u>Directional/wayfaring signage</u>: The signage program should also assist the waterside and landside visitors to the Delta especially to the key points of interest and activity nodes.
- <u>Interpretive/educational signage</u>: An array of historic, natural, and infrastructure resources in the Delta could be of interest to the general public. This part of the signage program would inform the public about these resources and describe CALFED and other public projects that are located in the Delta.
- <u>Safety & hazard signage</u>: This signage component would inform the public and standardize information pertaining to hazards and other safety-related conditions in the Delta. Mercury risks for fish caught in the Delta is an example of a hazard signage subject.

Urban Edge Zones

Urban Edge Zones are areas of opportunity for Delta aquatic recreation. Urban Edges should include water-oriented features as part of development or redevelopment actions. As an example, the Sacramento River Waterfront Joint Powers Authority (JPA) provides oversight to the development of the Sacramento River waterfront shared between the City of Sacramento and West Sacramento. Opportunities include matching specific public needs for water oriented facilities with potential development fees to finance the design and development of such facilities. However, ensuring follow-through with the tentative proposals for such aquatic related amenities is problematic and therefore requires firm commitments by project proponents to implement and

otherwise follow through with such projects. Often a key determination in ensuring the success of these initiatives is defining the entity that will become the responsible party for operations and maintenance.

6.4 Identified Recreation Facilities

Based on the deferred maintenance and demand projections outlined in Chapter 5, recommended improvements are detailed by the six Delta zones below. A natural sorting of recreation serving facilities is assumed, especially those provided by private operators. Consequently, no attempt is made to create a more evenly distributed system of those facilities. For example, the highest concentration of existing aquatic facilities is in the Delta Breezeway Zone; consequently the greatest number of improvements are also located in this Zone. Another assumption regarding Delta facility improvements is that it is more probable and feasible to expand or build upon existing facilities than to develop equivalent new facilities. A final assumption is that there is likely a good reason for facilities to be where they are. Location is in part dictated by levee configuration, water depths, proximity of nearest public road, and other infrastructure requirements. However, for publicly developed facilities, such as the boat-in destination areas and community related transient dock facilities, the suggested location is more opportunity and resourced based.

Table 6.1 shows the break-out of improvements anticipated for the private facility operator by Delta Zone by percentage of total improvements. These anticipated improvements are translated as capital improvement costs by Zone in Chapter 7.0.

Table 6.1		
Facility Improvements by Zone		
Delta Zone	Percentage	
Northern Delta Gateway	13.2%	
Bypass	5.7%	
Delta Hub	15.0%	
Delta Breezeway	41.8%	
San Joaquin Delta Corridor	13.5%	
Southern Delta Reaches	10.8%	
Total	100.0%	

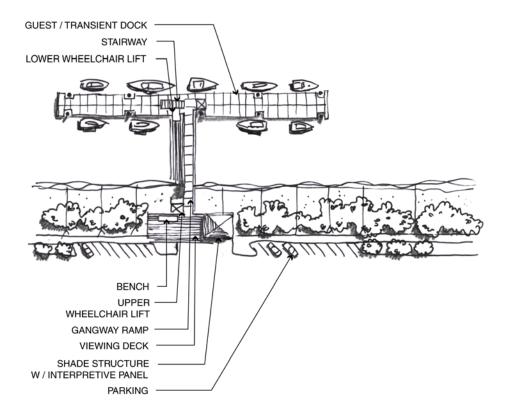
6.5 Specific Facility Improvement Descriptions

The following facilities and use areas are needed to improve the Delta boating environment in terms of services and destinations. This information synthesizes comments derived from public workshops and a statewide survey created for the 2002 SSJBNA, concepts developed by the RCAC, and prior Delta recreation studies. In the survey, boaters responded to a question regarding what facilities would make a better boating experience in the Delta. The following facility descriptions respond to this preference and conceptual studies data. These schematic designs range in level of development, proximity to population centers, and accommodations to recreational activity types.

Transient /Courtesy Docks

Both surveyed boaters and local business interests expressed the need for transient docks located in conjunction with landside facilities, towns, and attractions in the Delta. Transient/courtesy docks would increase the number of potential destinations for Delta boaters and provide expanded market opportunities to local businesses, by offering docking, fishing, shopping, dining, socializing, touring, or information gathering. Courtesy docks are compatible with existing commercial areas that offer multiple services, and/or historic or dining resources. Expanded facilities could include overnight docking and ferry transit components. Transient docks require both the private operator's and public service provider's interest to develop such facilities. As noted in Chapter 5, transient docks are limited to major destination opportunities, such as exemplified by the Walnut Grove Transient Dock, because of regulations that require a full range of physical access. Figure 6-3, Transient Dock Concept illustrates a typical waterside facility for accessing Delta towns, facilities, and special use areas. Three developed examples of publicly developed transient docks exist within the Delta -- facilities at Walnut Grove, Rio Vista, and Isleton.

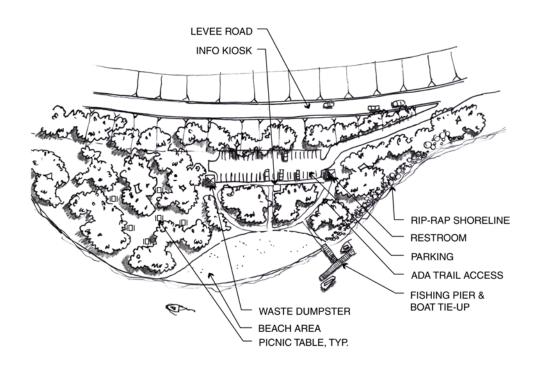
Figure 6-3



Beach/Day-Use Facilities and Sites

Beach access was a frequently cited need -- especially by small boat owners -- in both survey responses and public workshops. Specialized users such as water-skiers stated a preference for more beach-type sites and facilities. **Figure 6-4** presents a beach use area that is intended to meet the needs of those looking for a developed beach site or a good fishing spot. The site could serve land-based recreational enthusiasts as well as boaters. The schematic shows a wide beach, a guest dock, and a fishing pier equipped with a fish-cleaning station. Optimally, the small five-acre facility would be developed where a graded bench in the levee could support a "naturally" configured beach.

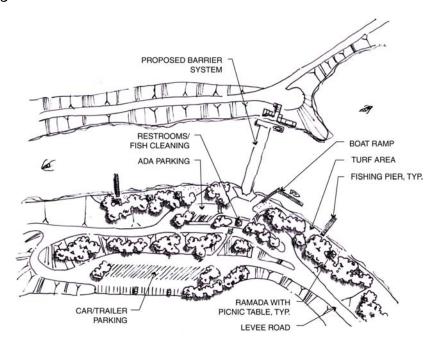
Figure 6-4



Day-Use Sites at Barrier Structures

A CALFED/DWR South Delta Project includes several permanent barrier structures to prevent adverse water flows and, in particular, help prevent fish from being pulled into the water intake facilities in the southern part of the Delta. Sited near water intake structures, barrier structures are intended to control water flows to and from certain parts of the Delta. These structures are problematic for boating because they will prevent access for watercraft and will typically involve lock-type features and mechanical devices for moving vessels from one side of the barrier to the other. Recreation-related mitigation is required in association with the development of the barrier structures. These sites will be optimum locations for recreational facilities because (a) boats will be waylaid at the facilities for periods of time, and (b) auxiliary support facilities such as parking, power, and restrooms would have to be built and maintained for barrier/lock system personnel even without recreation amenities. Figure 6-5 Day-Use at Typical Barrier Site, illustrates how a recreational component could be added to a barrier site. Simple additions to the facility could transform a negative "barrier" into an attractive boating destination, water access point, and fishing spot. A facility of this type could be used for launching and docking, fishing, and picnicking. The five-acre site could provide parking for autos, RVs, and boat trailers. ADA-accessible parking could be provided near accessible fishing piers. Docking and launching could take place on the lower side of the barrier while fishing piers could be placed on upper and/or lower sides of the barrier. Restrooms and fish-cleaning facilities could also be provided at this site.

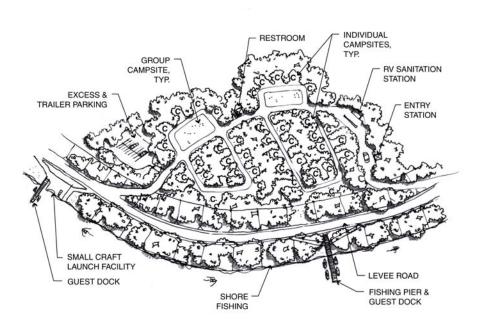
Figure 6-5



Boat-In Campground and Day-Use Sites

Boat-in camp ground and day use facilities fits the frequently stated need for additional short term and longer term destination sites in the Delta. The natural orientation of this facility type makes it especially appropriate to take advantage of the scenic and natural resources in the Delta. Figure 6-6 illustrates a fifteen-acre boat-in campground and day-use area that would serve as a prime boating destination and overnight camp spot. Although still connected to land for maintenance purposes, this facility would be accessible to the public by boats only and ideally would be located along the primary traveled waterways. Combining camping and day use would generate enough usage to justify such a facility. For day users, it would provide a convenient place to get off the boat, use the restroom, and let the kids run around. For overnighters, it would offer an alternative to non-permitted buoys or illegal camping on private property. Boaters would have the option of docking their boats in the slips or at camp portages with adjacent tent sites. They also would have the option of sleeping on their boats or at the tent sites. The developed and maintained restrooms/showers and grasscovered spaces all would be attractive features for boaters.

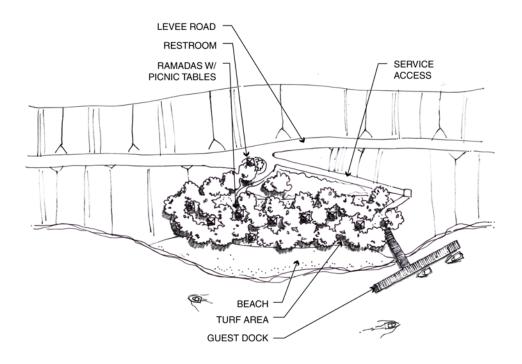
Figure 6-6



Boat-In Beach Sites

Boat-in beaches are a highly desired feature in the Delta as expressed in survey responses and workshop feedback from the 2002 SSJBNA study. Private land owners also conveyed the need for this type of facility – partially to reduce the level of trespass on private property. **Figure 6-7** illustrates a concept for this facility. A boat-in beach can be built with minimal infrastructure components and could be furnished with vault toilet restrooms, which do not use potable water and have infrequent service needs. Restrooms would need to be sited within 50 feet of a service road for ease of maintenance. A three-acre site is estimated for this type of facility to include boat docking and a picnic area with shade ramadas.

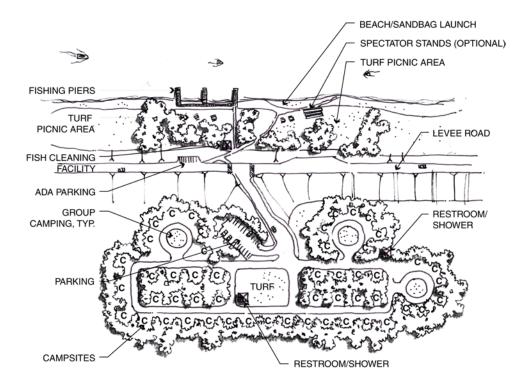
Figure 6-7



Campground and Access for Non-Motorized Aquatic Uses

A ten-acre non-motorized boating facility is recommended for a variety of Delta recreationists, including windsurfers, small fishing parties, kayakers, and other paddle board enthusiasts. On the beach side there would be an open turf area for rigging, a launch, a wind shelter, and fishing piers. Along the road there would be room for a pull-off to drop gear before parking and to include space for ADA parking. The camp side would have amenities such as showers, a playground area, fish-cleaning facilities, and an RV dumping station. Open areas, or commons, could be used for sports, group events, or quiet activities. **Figure 6-8** shows a concept for a low-profile camping site for specialized Delta recreational enthusiasts.

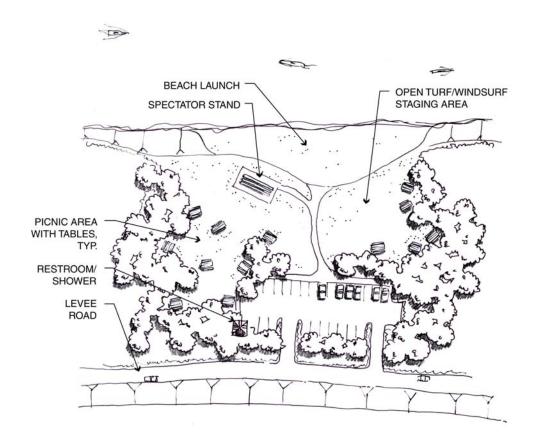
Figure 6-8



Kite/Wind Surfing Day Use Sites

The river access layout for this facility prototype is planned for windsurfers and located in a windy waterway location. One of the biggest needs at this type of facility will be adequate space for windsurfers to set up their gear. A large open area of sand or turf is shown near the beach launching area, and there also is a parking and gear drop-off area. The staging area would be close to the launch area to make the loading/unloading process manageable. Along with picnic areas, the two-acre facility would contain restrooms, showers, and an area for spectators. These combined features could make The Breezeway Zone Windsurfing Access a popular landside as well as waterside destination. **Figure 6-9** illustrates a day-use access point primarily intended for wind sport enthusiasts.

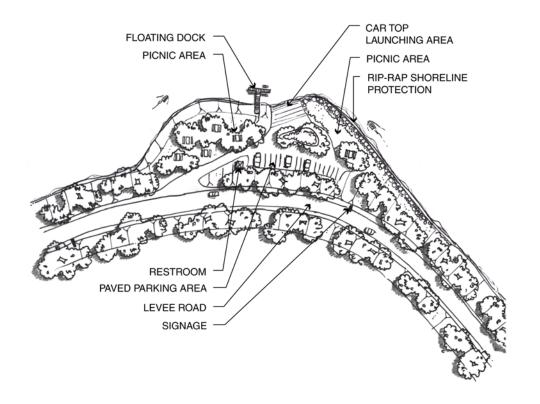
Figure 6-9



Day-Use Access for Non-Motorized Aquatic Uses

A day-use facility could be strategically located along no-wake sloughs and within "natural areas" of the Delta conducive to paddling and fishing. Like the boat-in campground, this facility could be developed with minimal infrastructure requirements. If located in a no-wake zone, the addition of guest docking could create an attractive destination rest stop for boaters without compromising conditions for the non-motorized boat users.

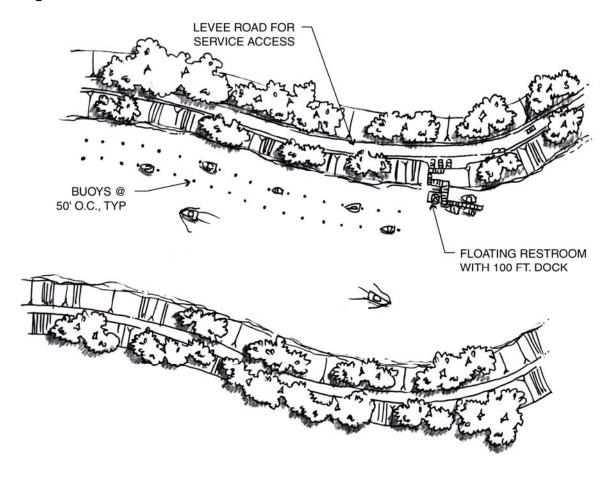
Figure 6-10



Buoy Field Sites

Buoy fields are an alternative to the boat-in campground concept. Currently Delta Meadows functions as an impromptu buoy field destination for boaters, but does not offer essential provisions for convenience and hygiene. In areas where non-permitted buoys currently exist, a publicly operated buoy field facility could serve as a useful amenity to help maintain the scenic quality of the waterway and reduce the risk of accidents and water contamination that can result from makeshift buoy fields. Because of the extreme seasonal fluctuations of water flows in the Delta, floating buoys would need to be detachable during the peak flow winter period and then reattached during more favorable conditions. In addition to the buoy field, this suggested facility would include vault toilets on a floating platform with boat tie-ups. This three-acre buoy field layout would be ideal in some of the current anchorage areas, including the scenic sloughs and inundated islands.

Figure 6-11



Floating Restrooms

A frequently-cited deficiency in the Delta is restrooms. Floating Restrooms, as illustrated in **Figure 6-10**, could be provided in isolated sloughs or unpopulated waterways where no other support facilities exist. A potential benefit of additional restrooms would be the reduction of illegal dumping of wastes in the Delta waters. The placement of floating restrooms should consider both motorized and non-motorized travel routes in the Delta.

Figure 6-12

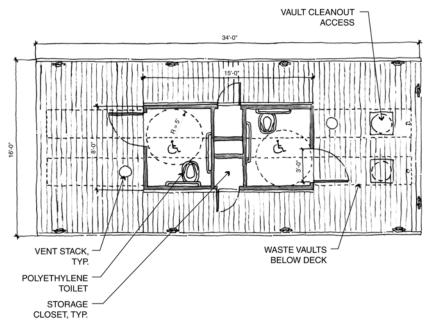
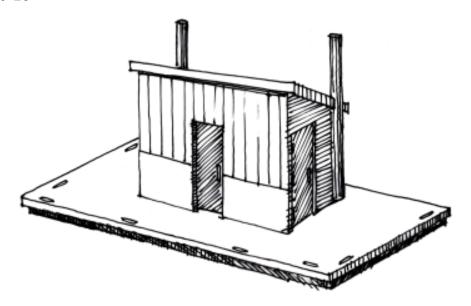


Figure 6-13



Other Identified Facility Needs

Other facilities or uses previously identified include a variety of boating trail features such as non-motorized boat trails, motorized boat trails, and transient dock hybrids developed in conjunction with landside features such as wineries, bed and breakfast facilities, and transit hubs.

6.6 The Physical Strategy

The Delta Conceptual Recreation Strategy (See color map insert) illustrates the primary components as described above, with other pertinent features including:

- publicly owned lands in the Delta
- the major road corridors running through and around the Delta;
- city urban limits and sphere of influence boundaries of the urbanized areas within the Secondary Zone
- the limits to the Primary and Secondary Zones within the Legal Delta, County boundaries
- existing transient dock facilities
- existing landside trails
- existing launch sites
- windsurfing access sites
- pump out facilities
- hunting facilities
- water features
- other geographic features

Proposed strategy components include:

- Gateways
- Additional transient facility sites not associated with existing marinas
- Windsurfing sites
- Waterskiing sites
- Boat-in destination sites (either land-based or buoy-field-based)
- Non-motorized boat trail use areas
- Enhanced wildlife/habitat areas

Suggested distribution of recreation facilities by Delta Zone follow.

The Northern Delta Gateway

The Northern Delta Gateway would include:

- enhanced aquatic facilities,
- a transient dock as a part of the Joint Powers Authority (JPA) zone between West Sacramento and the City of Sacramento,
- a landside and waterside Gateway feature in the vicinity of Old Town.
- a Gateway feature near Freeport,
- community transient docks at Clarksburg and Courtland, and
- non-motorized boating trails for Elk, Sutter and Steamboat sloughs with accompanying non-motorized launch facilities.

The Bypass

For the Bypass Zone, in keeping with its low threshold and non-urban character, this plan suggests:

- non-motorized trail features located in the Lindsay, Cache Slough and Liberty Island vicinity,
- non-motorized launch and day-use facility to accompany the trail areas, and
- a Gateway feature at the I-80 Bypass intersection as an adjunct to the proposed DFG Pacific Flyway interpretive facility.

The Delta Hub

The Delta Hub would include:

- a Gateway feature at the I-80 Twin Cities Road interchange
- transient docks in the Locke vicinity and at the community of Terminous.
- an overnight boat-in destination in the Delta Meadows area,
- a non-motorized boating trail loop in the Cosumnes, McCormack, and Snodgrass Slough vicinity, and
- non-motorized boat launch facility and day use area to accompany the trail feature.

The Delta Breezeway

The Delta Breezeway would include:

- community or marina based transient dock facilities in the vicinity of Pittsburg, Big Break, Bethel Island, the east side of Webb Island or across the river on the Delta Loop side;
- three Gateway features at

- o Highway 160/Highway 4 junction,
- o Highway 12 at Rio Vista, and
- o the entry to Bethel Island
- urban Edge Areas for the Pittsburg, Antioch, and Oakley shorefront areas and the Rio Vista/Sacramento River waterfront area; and
- potential boat-in destinations would be located at the Little Sherman Island and Big Break vicinities with new Wind/Kite-surfing access sites indicated on the north and south sides of Sherman Island.

The San Joaquin Corridor

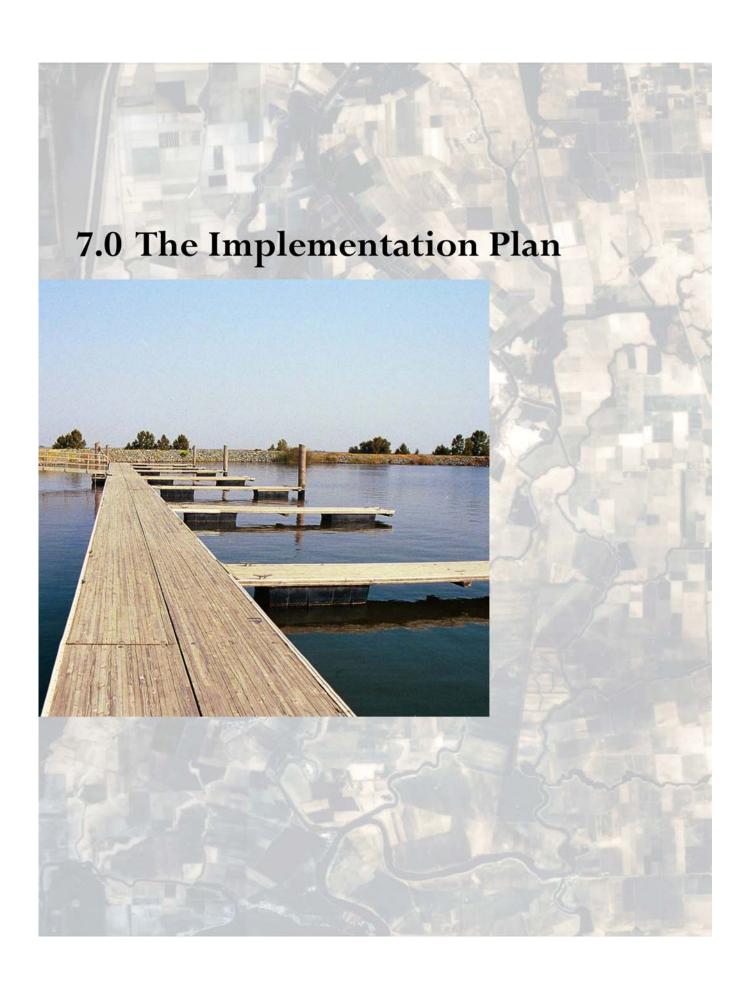
The San Joaquin Delta Corridor would include:

- Gateways at the Highway 12 to I-80 interchange, within the City of Stockton, and the Highway 4 / I-80 interchange;
- a transient dock located for the port area of Stockton;
- boat-in destinations provided for the Mildred Island inundated areas and somewhere along the San Joaquin corridor – perhaps in the Hog Island vicinity; and
- an Urban Edge Zone in the Port of Stockton vicinity.

The Southern Reaches

The Southern Reaches would include:

- two Gateway features:
 - o one in the Mossdale vicinity along 580, and
 - o the other along Highway 4 in the vicinity of Discovery Bay;
- a non-motorized boat trail along the lower reaches of Old River;
- a boat-in destination in the Coney Island/Clifton Court vicinity;
- potential Urban Edge Zone for the northern City of Lathrop vicinity;
 and
- potential water-ski day-use access points in the Victoria/North Canal vicinity.



7.0 THE IMPLEMENTATION STRATEGY

Summary Points

- A successful destination takes advantage of, and builds upon, the destination's unique character and setting, and is realized through a partnership between public and private interests.
- The vast majority of the costs of implementing the Delta Master Strategy will be borne by the private sector through marina and related facility expansions and upgrades.
- Enhancements that improve the setting will make a significant difference, but they must be provided by public agencies. They include:
 - Improve the setting by increasing the number of quality destination areas (such as Delta Meadows): Cost is approximately \$20 million over the next 10-15 years. Funding sources include Department of Boating & Waterways, CALFED, State Parks or water bonds.
 - Provide better information and marketing: Better marketing can be achieved through partnerships with Chambers of Commerce and private non profit ventures. Delta Gateway information centers and signage can be developed for an estimated \$0.5 million each.
 - Provide for Delta operations and maintenance especially dredging, vegetation control, and removing submerged debris. Also needed are boater safety programs, signage, habitat improvement, shore fishing access points, and maintenance at gateways and visitor centers. All these require ongoing rather than one-time funding.
- Marina Expansion and Rehabilitation will cost private operators millions of dollars. Upgrading existing marinas just to maintain the status quo will cost nearly \$125 million over the next 10-15 years. Expanding, replacing, and adding marinas to meet use and projected demand will cost more than \$66 million; providing related facilities and services will cost another \$18 million.
- Most marina capacity expansion will occur at edges of urban areas, primarily Sacramento, West Sacramento, Stockton, Lathrop, Antioch, Pittsburg, Brannan Island, and Discovery Bay. Public agencies can partner with developers to attract grants, low-interest loans, and other funding assistance.
- Public funds and public agency development projects to enhance the Delta setting include destination mooring areas, boat trails, shore fishing access areas, day use sites, launch ramps, information and signage centers and programs, plus historical and habitat restoration interpretation could cost more than \$40 million. Grant funds are available from several sources.
- ❖ Total cost of the Sacramento San Joaquin Delta Master Plan capital improvements would be approximately \$250 million.
- Management of the Delta remains complex, fractured, and inadequate. The Delta Protection Commission paired with some form of Delta Conservancy would create an effective way to address the challenges and provide a guiding hand sorely needed in the region able to protect agriculture, resources, public access, and recreation.
- Until a conservancy-commission or other trans-jurisdictional authority exists, the Delta Protection Commission must work within its limitations to balance the needs of recreation with other interests in the Delta.

7.1 Introduction

This section summarizes concepts for effective implementation strategies of the framework for recreation improvements described in Chapter 6. The discussion builds upon the opportunities and challenges associated with the unique context of the Delta by using fundamental recreation facility planning principles.

One of the most important characteristics distinguishing the Delta from other recreation planning settings is the intricate mix of private/public of interests. Consequently, the Delta presents an unconventional recreation context that necessitates adapting strategies to these unique public to private configurations. This adaptation is imperative for several reasons, but is particularly important for determining roles, responsibilities, leadership, and financial support.

This strategy first looks at what makes a successful resource-based recreation destination. A successful destination takes advantage of, and builds upon the destination's unique character and setting. For example, at Monterey Fisherman's Wharf, the basic setting is the ocean, the historic cannery, the harbor and fishing boats. In a successful resource-based recreation destination, a partnership typically takes place between public and private interests. Again in Monterey, the City and State have established the basic infrastructure, parking, the wharf itself, the marina, as well as preservation of the historic Customhouse Adobe. Private enterprise has completed the destination partnership with the development of restaurants, shops, fishing, and the operation of services and programs such as whale watching tours. A third interest party in these relationships is the nonprofit organization that can help in the interface between the public sector and private interests. In the case of Monterey Fisherman's Wharf, the Monterey Aquarium provided a new dimension to the waterfront area in terms of a destination attractor of public interest, a provider of services and a quality enhancement to the overall image of the waterfront.

In contrast, the Delta has a very different partnership configuration. Private enterprise, through marina and restaurant development, has taken advantage of the basic setting of the miles of public waterways, historic town sites, and rural agriculture setting. Public support has come in the form of roadways, levees and other infrastructure, and limited recreation development. However, in the Delta public investment has also had negative effects on recreation. For example, the major public improvements of water diversions and contemporary methods for levee maintenance (substituting vegetation with rip-rap type reinforcements) have reduced the Delta's aesthetic and recreation values. Extensive regulatory and permitting

requirements hamper construction of new and expanded facilities and essential maintenance-related dredging. In contrast to projected growth, growth of recreational boating in the Delta in recent years has been slower than expected, due in part, to this imperfect partnership. Lastly, there is no regional and resource based non-profit entity or special district that could define or help implement a vision for new facilities and/or programs.

Looking forward, there are a number of important actions and substantive funding commitments that would be required to implement the Delta Recreation Master Strategy. The vast majority of the costs would be borne by the private sector through marina and related facility expansion and upgrading. But the items that will make a significant difference are the comparatively small but necessary items that would reasonably be implemented by public agencies. These actions, more fully described below, address improving the setting by increasing the number of quality destination areas, improving maintenance and patrol, adding infrastructure features such as pump outs and restrooms, and providing better information and marketing.

Required implementation activities and related strategies are as follows:

- Publicly developed new and improved destination areas and facilities
- Other publicly or nonprofit funded and supported actions: i.e. a comprehensive information program, shore fishing, habitat and historic restoration, and interpretation
- Delta operations and maintenance-related access
- Marina expansion and rehabilitation
- Marina-related service facilities

7.2 Publicly Developed New and Improved Destination Areas and Facilities

Chapter 5 describes the need for more and larger Delta Meadows-like destination areas, smaller levee-based swim and day-use sites and transient docks in association with onshore communities and visitor center facilities. These facilities are primarily characterized as boating destinations and boating enhancements. Based on projected growth demands for water serving facilities, the costs of such improvements is approximately \$20 million over the next 10-15 years. The following is a list of improvements that fall into this category:

Table 7.1 Major Publicly Funded Destination Type Improvements		
Facility	Total Latent Demand cost	
Transient docks (urban)	\$1.3 million	
Transient docks (historical, agricultural		
and natural resource serving)	\$2.0 million	
Destination mooring areas (overnight)	\$5-8 million	
Day-use/beach combinations	\$8.0 million	
Boat trails	\$0.5 million	
Other	\$2.0 million	
Total	\$20 - 22 million	

Potential funding sources for this category of improvements include:

- Department of Boating & Waterways Grant and Loan programs
- CALFED improvement obligations
- Future State Park or Water Bonds
- Other grants and non-profit programs
- Wildlife Conservation Board Grants
- Proposition 50 Bond funds
- ISTEA grants

CALFED

As described in Chapter 2, under the Record of Decision mitigation requirements, CALFED is obligated to include recreation improvements in association with water related projects throughout the Delta (beyond CEQA/NEPA mitigation obligations). Evaluation of proposed CALFED projects in the Delta indicates that there will be several opportunities to create new destination type day use facilities. CALFED funding should be developed to realize such facilities as much as possible. This strategy should assist in shaping and influencing how these recreation facilities are developed.

State Bond Funding/California Department of Parks and Recreation

When drafting park and resource bonds, typically the legislature will earmark funding for regional areas of statewide significance, such as Lake Tahoe or San Francisco Bay. Although the Delta could be identified as a recreation-related funding candidate for a State Bond based on a locally or legislatively developed initiative, it is especially pertinent to the Department of Parks and Recreation (DPR) Great Central Valley Vision Initiative. In 2003, State Parks Director Ruth Coleman defined an agenda with a vision for

the Great Central Valley to "develop a roadmap for the State Park System's future role in the Central Valley." A State Bond fund is one alternative funding strategy that could provide the opportunity for Delta-related recreation projects to be implemented. The Delta is an ideal candidate for consideration in this Valley Vision initiative as it is a perfect match to many of the DPR Vision recommendations:

- Expand recreational facilities for camping, day-use, fishing, boating, and trails to accommodate larger families and groups in existing parks along river corridors and in the Delta;
- Expand land holdings at existing parks and acquire new parklands along major river corridors such as the Sacramento, Tuolumne, Stanislaus, San Joaquin, and Merced Rivers, particularly where an opportunity exists to link State Parks and other lands in public ownership;
- Acquire lands that preserve and protect vanishing natural resources once more abundantly evident in the Central Valley; and
- Better preserve and interpret the rich history associated with the Valley's past, including the full sweep of Native American past, agricultural history and the stories of immigrants.

In response to DPR's Valley Vision Initiative, the Delta Protection Commission recommended at minimum that funds be developed to plan for, and improve undeveloped lands already owned by DPR. Links with the DPR Valley Vision should be pursued as a specific focus for a State Bond funding initiative. Legislators representing the Delta and its primary boating market area should be encouraged to pursue such allocations in the future.

7.3 Other Publicly Developed and Funded Improvements

Chapter 6 describes a number of elements that are intended to enhance and better articulate the Delta area and resources. These elements include a variety of capital improvement or capital outlay projects that could create a more cohesive and better-used resource area. These additional publicly funded and developed projects, facilities and infrastructure that require capital outlay, are listed in Table 7-2.

Table 7.2 Special Improvements and Deltawide Elements		
Improvement	Estimated Cost	
Information/Gateway Centers	\$3.5 million	
Deltawide Signage	\$2.0 million	
Shore Fishing Access Points and Specialty Access points	\$3.5 million	
Habitat restoration/mitigation	\$5–10 million	
Historic restoration/interpretation	\$5–10 million	
Total	\$25.0 million	

Potential funding sources for these improvements include:

- Local and/or State tourism funding
- Caltrans: Grant programs such as ISTEA (Intermodal Surface Transportation Efficiency Act). Grants from this source are useable for roadside fishing access projects.
- Wildlife Conservation Board (WCB). The Board provides grants for fishing access improvements.
- State Bond Funding Described above in Section 7.2
- Other sources such as DFG's Delta Habitat Enhancement Fees (formerly striped bass stamps)

Delta Gateways: Informational and Visitor Facilities

The Delta Gateway/Information Centers and signage program, as described in Chapter 6, are intended to foster a positive image of the Delta and provide directional information to new visitors. Gateways are envisioned as modest information facility type structures or add-on type components to other existing facilities. A total of seven gateways could be developed in the next fifteen years and serve as a basis for an estimate of \$3.5 million at around \$0.5 million each.

These facilities and related marketing activities should be undertaken as a partnership between a local non-profit organization such as the California Delta Chambers, marina operators, and local and State agencies. In addition, it may be possible to obtain special tourism grant funding from local, State, or Federal agencies.

7.4 Operations and Maintenance

Operations and maintenance (O&M) is a large part of the equation in accomplishing long-term enhancements for the Delta. Two primary issues associated with O&M are (1) the source of funds and (2) the entity responsible for continuing the operations and upkeep. Principal recreation-related operations and maintenance-related needs can be summarized as:

- Dredging/exotic vegetation controls/submerged obstacle removal
- Gateways and information/visitor centers (maintenance and annual funding)
- Day-use/swim areas
- Shore fishing access points
- Destination mooring areas
- Additional boat patrol/enforcement
- Boater safety programs
- Delta signage program
- Habitat improvements
- Other

All of these proposed facilities and programs require ongoing, rather than one time funding sources such as a State Bond funding base. Bonds funds are generally limited to land acquisition, and various capital improvements such as facility and site development, but not for ongoing operations and maintenance needs. A total annual budget for operations and maintenance for the items listed above is estimated to be around \$6.0 million.

One new source of funding for operations and maintenance requirements could be developed through a special Delta fund. Special legislation will be required in order to implement such a fund. After establishment, it probably would be best administered as a grant program, providing funding to agencies such as State Parks, County Parks, Sheriff's Departments, Department of Boating and Waterways, to meet and adjust to specific needs and priorities over time. This strategy could also allow initial budgeted funding to assist with capital improvement items, such as destination and information center improvements, and then grow into supporting their operation and maintenance needs. Possible sources of funding to consider include:

- A nominal charge for water delivered through the Delta, \$1/acre foot for instance would generate \$4-6 million annually;
- Allocation of a portion of the sales tax collected from boats and related equipment within the primary market area of the Delta; and

• Allocation of State gasoline taxes for vehicle gasoline used driving to the Delta for boating purpose. (The average driving distance per trip is approximately 90 miles.) A similar allocation is made for travel to off-road vehicle recreation areas.

Local governments typically support operations through general funds. The East Bay Regional Park District has a voter approved parcel tax revenue stream for O&M and State Parks and other State and Federal land managers are funded through annual budget allocations.

7.5 Marina Expansion and Rehabilitation

Marinas, campgrounds, restaurants, and overnight accommodations are primarily run and owned by private enterprise. Nearly 100 marinas and numerous auxiliary businesses support aquatic recreation in the Delta. Many of the boating-related facilities, such as marinas serving aquatic recreation, are long-established businesses with a loyal customer base. These private enterprises supply most of the know-how and resources needed to carry out improvements and operations. The businesses succeed or fail based upon their ability to provide desired facilities and to adapt to changing market conditions. Refer to Chapter 5 for information regarding the extensive rehabilitation and new facility needs for marinas over the next 10-fifteen years. **Table 7.3** indicates the estimated distribution of these facility needs by Delta Zone.

Table 7.3 Distribution of Private Marina Facility Needs by Delta Zone		
Zone	Percent	
Northern Delta Gateway	13%	
Bypass	6%	
Delta Hub	15%	
Delta Breezeway	42%	
San Joaquin Delta Corridor	13%	
Southern Delta Reaches	11%	

The costs for expansion and rehabilitation are limited to the private enterprise-related costs. As a partner, however, the California Department of Boating and Waterways provides a low interest program for assistance with such improvements. Private enterprise will likely respond with such improvements as the overall Delta is enhanced and the public is informed concerning the resource.

Half of the future expanded marina capacity is anticipated to take place on urban edges outside the Primary Zone, primarily Sacramento, Stockton, Tracy, and Antioch. These expansions will likely take place in conjunction with redevelopment projects and major new developments. Partnerships between private enterprise and these agencies could be advantageous, assuring action, reducing costs, and providing long-term revenue sources for the agencies.

The Detail Capital Improvement Strategy as shown in **Table 7-4** is a cumulative listing, with associated costs, of all the proposed improvements and project expenditures recommended in this Strategy and focusing on the private sector's contribution to facility improvements in the Delta. Two primary classifications of improvements and projects are recommended:

- Marina Slip Replacement/Upgrade/Repair including Dry Boat Storage
- Marina-Related Service Facilities

These improvement estimates are based upon both deferred major maintenance needs and normal aging of facilities in the Delta from the present through the year 2020. The total estimated cost for all facilities complete replacement, partial replacement, maintaining or upgrading, or maintaining the status quo is approximately \$125 million. This estimate includes an allowance for repairs to marinas owned by persons who did not respond to the facility survey. All 11,674 marina slips presently in the Delta Inventory are included in one of the two categories because physical inspection of 60 marinas and projections for 30 other marinas indicated that all Delta marinas would need attention by the year 2020. While marina slips are the unit of measure used in this analysis, it is important to note that all marina support facilities such as demolition of existing facilities, dredging, utilities, pilings, walkways, fuel docks, offices, parking, restrooms, as well as engineering costs are included in the per slip cost projection. The marina cost models, from which the cost takeoffs were derived and a description of the methodology used in doing so, are located in **Appendix 7-1** of this study.

Methodology for cost estimates for marina-related improvements

Demand projections indicated that an additional 2,931 marina wet slips would be needed by the year 2020. This posed some questions: what should be the appropriate mix of slip types and what percentage of new slips versus the replacement of old slips? Also factored in the estimate is an approximation of the number of smaller slips (20' long and under) that would be replaced by longer slips (40' long and greater), based on market demand and then an additional estimate of how many of the removed smaller slips

would be replaced by dry boat storage. The resulting estimate represents a composite strategy that incorporates the adding of both wet and dry stack storage capacity to meet the 2020 demand for marina space and yet it also factors in a net reduction of the total number of wet storage space for the smaller boats.

Existing Latent Demand Strategy

The addition of two new marinas with 250 wet slips each, for a total of five hundred new slips, would be the first component for meeting existing latent demand. These new marinas would each have 150 dry stack boat storage spaces that would be applied to the latent demand for dry stack storage. Two new marinas would be located in the western Delta or Delta Breezeway because 90 percent of demand is in that area.

The second component to meet latent demand would be the addition of 771 wet slips to existing marinas over the next fifteen years based on the demand for new wet slips. Slip length and width should be in response to market conditions and boating preference trends at the time of construction.

Future Demand Strategy Options

1. Add Additional New Slips to Existing Marinas (1,660 wet slips)

This strategy for meeting the balance of the demand for wet boat slips includes the addition of 40', 45' and 50' slips to existing marinas with 1,260 of the 1,660 to be covered slips to meet a need expressed in large boat owner surveys.

2. Replace Existing Slips with Longer Slips and Supplement with Dry-Boat Storage

This strategy for meeting the balance of the demand for wet boat slips includes the combination of 1) the addition of 40', 45' and 50' foot slips to existing marinas and 2) the replacement of the 20 foot and less slips for dry stack storage. In this strategy, 1,660 short wet slips would be demolished and replaced with 663 longer slips. The net loss of 697 wet slips would be replaced with dry stack storage. Since some dry stack storage units will accommodate boats up to 35' in length, it is anticipated that owners of the displaced boats under 35' feet in length will move their boats to dry stack storage. Again, market conditions and boating trends will dictate exactly what type of boat storage mix is feasible at the time of construction. This strategy appears to be more cost effective than Strategy 1.

Table 7-4 Detail Capital Improvement Strategy				
			Estimated Cost New	Estimated Cost
Description	Units	Unit Cost	Development	Replacement
Marina Slip Replacement/Upgrade/Repair	ı			
Total Replacement	1,195	\$28,188	33,684,660	33,684,660
Partial Replacement	2,716	\$17,294	46,970,504	46,970,504
Maintain or Upgrade	3,187	\$6,859	21,859,633	21,859,633
Maintain status quo	1,876	\$4,637	8,699,012	8,699,012
Unresponsive Marinas	2,700	\$5,000	13,500,000	13,500,000
Totals Replace/Upgrade/Repair	11,674	\$10,683	\$124,713,500	\$124,713,500
Existing Latent Demand Facility Requirement	nts			
Add Two New Marinas	500	\$31,000	\$15,500,000	\$15,500,000
Add New Slips to Existing Marinas	770	\$24,586	\$18,931,220	\$18,931,220
Sub Total	1,270	\$27,109	\$34,431,220	\$34,431,220
	· · · · · · · · · · · · · · · · · · ·	, , ,	, , ,	, , ,
Future Demand Strategy Options				
1. New Development Strategy - 1660 Addition	nal New S	Slips		
400ea 40' uncovered slips	400	\$10,400	\$4,160,000	
800ea 40' covered slips	800	\$16,000	\$12,800,000	
400ea. 45' covered slips	400	\$22,500	\$9,000,000	
60 ea. 50' covered slips	60	\$30,000	\$1,800,000	
Sub Total New Development Strategy	1,660	\$16,723	\$27,760,000	
2. Replacement Strategy - 1660 Replacement	Sling			
Demolition of 26' slips	-1,660	\$400		\$664,000
Build back 40' uncovered slips	400	\$10,400		\$4,160,000
Build back 40' covered slips	103	\$16,000		\$1,648,000
Build back 45' covered slips	400	\$22,500		\$9,000,000
Build back 50' covered slips	60	\$30,000		\$1,800,000
Balance of Slip Latent Demand w/ Dry	00	+30,000		72,000,000
stack	697	\$4,200		\$2,927,400
Sub Total Replacement Strategy	N/C	\$12,168		\$20,199,400
The Line and June at the Company of				
Estimated dry storage Expansion	450	ф10.000	ф. Г ОО ОСО	ф. / = 00 000
Dry Boat Stack Storage Facilities (1)	470	\$10,000	\$4,700,000	\$4,700,000
Sub Total Dry Storage Expansion	470	\$10,000	\$4,700,000	\$4,700,000
M : D1 / 1B 200				
Marina Related Facilities and Services	00	ф110 ж 00	#10.0%0.000	#10 0×0 000
Boat Launch Lanes	92	\$112,500	\$10,350,000	\$10,350,000
Vehicle w/Boat Trailer Parking Spaces	1,968	\$1,400	\$2,755,200	\$2,755,200
Transient Dock Tie-Ups	120	\$8,000	\$960,000	\$960,000

Table 7-4 Detail Capital Improvement Strategy				
Restroom Stalls	187	\$12,750	\$2,384,250	\$2,384,250
Shower Stalls	89	\$8,000	\$712,000	\$712,000
Day-Use/Picnic Sites	173	\$2,500	\$432,500	\$432,500
Fuel/Pumping Stations	14	\$55,000	\$770,000	\$770,000
Sub Total Marina Related Facilities and Services			\$18,363,950	\$18,363,950
Total Latent Demand Facilities			\$85,255,170	\$77,694,570
Total Replace/Upgrade/Repair Plus				
Latent Demand Facilities			\$209,968,670	\$202,408,070
Public Fund & Public Agency Development Production Mooring Areas	rojects		\$6,500,000	\$6,500,000
Boat Trails	5	\$100,000	\$500,000	\$500,000
Shore Fishing Access Areas		φ100,000	\$3,500,000	\$3,500,000
Small Picnic Areas	25	\$100,000	\$2,500,000	\$2,500,000
Day Use/Launch Ramp Combos			\$5,000,000	\$5,000,000
Day Use/Swimming Area Combos			\$5,000,000	\$5,000,000
Gateway Information Centers			\$3,500,000	\$3,500,000
Deltawide signage (All types)			\$2,000,000	\$2,000,000
Historical Restoration/Interpretation			\$6,500,000	\$6,500,000
Habitat Restoration/Interpretation			\$6,500,000	\$6,500,000
Total Public Funded & Agency Development Projects			\$41,500,000	\$41,500,000
Grand Total All Projects			\$251,468,670	\$243,908,070
(1) Includes 300 units attributable to 2 new marinas				

Dry-Boat Storage

This study quantifies dry boat storage as a stand alone improvement and cost item because it is a core component for both of the two improvement strategies of repair versus replacement. Trend analysis findings suggest that dry-boat storage fits into all alternatives for upgrades identified by operators. Dry-boat storage accommodates the need for adapting to changes in user preference trends (moving from smaller to larger wet storage slips) and responds to the limited space available for wet-storage expansion.

7.6 Marina-Related Service Facilities

In offering public services and facilities, another important variable is the role of the private marina operator who provides some public-serving

facilities and infrastructure, such as parking areas, launch ramps, public restrooms, transient or convenience docks, and pump-out stations. The marina operators provide these services and infrastructure to make their facilities more attractive and convenient to the public. This example is another aspect of the unique interface between public and private interests in the Delta. By accommodating broader public aquatic recreation needs, the private sector contributes to accommodating basic public needs.

A significant interface between public and private interests is through recreation-directed funding and loans. The State of California has a number of programs intended to encourage the development of marinas and/or aquatic access points, such as launch ramps, where needed. Many of the existing marinas in the Delta have been developed and/or expanded utilizing such programs.

Privately developed and maintained facilities that serve public needs include:

- Restrooms: Restroom services cater primarily to smaller boat users that lack on-board sanitation facilities.
- Boat launches: Launching facilities accommodate the majority of boats that can be trailered as points of access for the smaller class of boats.
- Pump-out facilities: Pump outs are a critical service intended to aid boaters and discourage illegal dumping of sewage wastes in the water. Typically a nominal fee is charged for pump-out services.
- Bilge Clean-Outs: Bilge cleanouts, similar to the pump out stations, accommodate the boater by providing convenient removal stations for engine-related waste products. Services are intended to discourage illegal dumping of bilge water.
- Transient or Courtesy Docks: Courtesy docks are provided for convenience to boaters to allow for landside activities such as dining at restaurants and shopping.
- Information Kiosks: Information kiosks educate or inform visitors regarding features or services.
- Parking areas: Parking areas serve for both vehicle storage and trailer storage.
- Fuel Stations: Fuel stations accommodate both the resident marina occupants and boaters in transit.

Other marina-related auxiliary improvements including both latent demand and new facilities, with cost estimated, are listed in **Table 7-5**.

Table 7 -5		
Marina Provided Public-Serving Facilities		
Facility	Total Latent Demand Cost	
Launch ramps	\$10.4 million	
Parking	\$2.8 million	
Transient docks	\$1.0 of an estimated total \$4.3 million	
Dry boat storage	\$8.0 million	
Restrooms	\$3.1 million	
Fuel/pump-out stations	\$0.8 million	
Picnic/Day Use	\$0.2 of an estimated total \$.4million	
Other Miscellaneous facilities	\$5 million	
Subtotal	\$25.7 million	

Funding for these facilities is again available from the Department of Boating and Waterways. In the case of the pump-out facilities, these costs are eligible for grants through DBW. With all the other facilities, low interest loans are available to private operators for the improvements. Grant funds are available for public agencies, but grant provisions limit fees and charges to the public.

7.7 Delta Conservancy Program/Joint Powers Alternatives

Until a conservancy-commission – or other trans-jurisdictional authority – is brought into being, the Delta Protection Commission must work within its limitations to balance the needs of recreation with other interests in the Delta.

This section looks at pending legislation and evaluates various opportunities and limitations associated with different ways that an over-riding conservancy organization would be structured. The ideal arrangement would be to adapt the existing DPC to assume expanded roles with some augmentation by state and local agencies. Joint powers and involvement brings coordination and combination of existing interests including:

- Delta Protection Commission,
- Conservancy format similar to Coachella and San Joaquin River Conservancy, and
- On-going funding mechanisms.

Sacramento-San Joaquin Delta Conservancy Program (Senate Bill 200)

A current bill moving through the legislature, Senate Bill 200 (SB 200 - Machado), recognizes the statewide significance of the Sacramento-San Joaquin Delta and declares a State goal to protect, maintain, enhance, and

restore the overall quality of the Delta environment with respect to its agricultural, habitat, public access, and recreational resources. SB 200 emphasizes the importance of discouraging urban development within the primary zone, as defined by Public Resources Code Section 29728. On March 29, 2005, the Senate Committee on Natural Resources and Water approved SB 200 and referred it to the Committee on Appropriations, where it is currently held.

SB 200 would establish the Sacramento-San Joaquin Delta Conservancy Program within the Coastal Conservancy, a relationship similar to the San Francisco Bay Area Conservancy Program. The Delta Conservancy would undertake projects and make grants or loans to public agencies and nonprofit organizations to fulfill a series of specific goals:

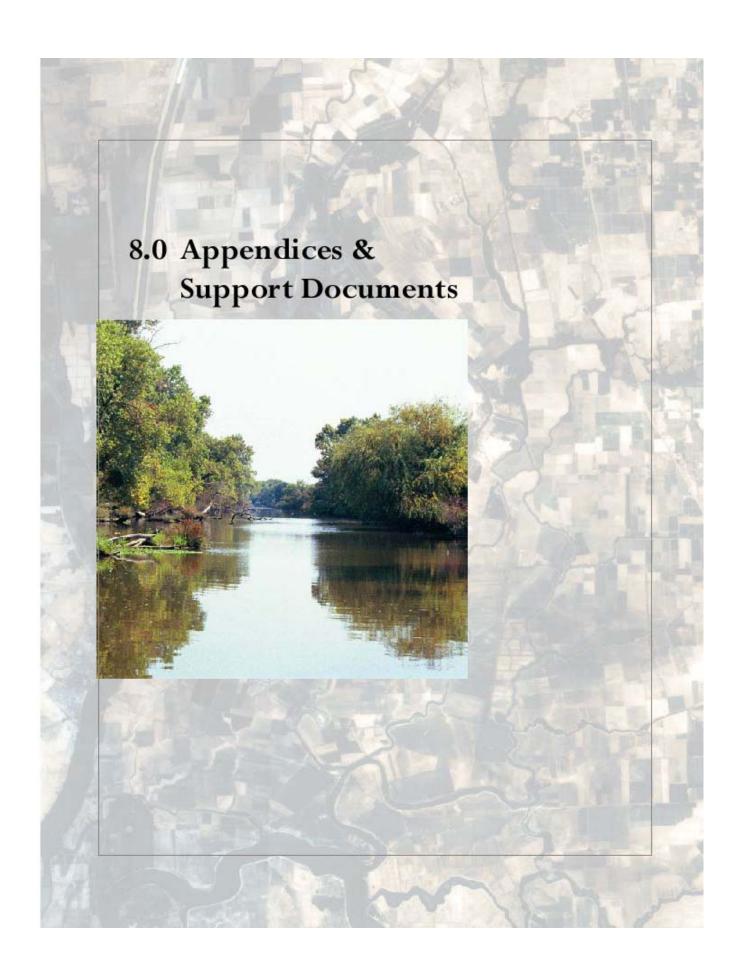
- Promote farming to integrate agriculture with environmental protection and sustain regional economics;
- Protect farmland and promote agricultural viability;
- Restore, enhance, provide, and protect open space;
- Increase compatibility of agriculture with other land uses (e.g. recreation, education, wildlife protection, and habitat);
- Work with public and private entities to support rural areas and urban waterfronts; and
- Provide public access and recreation opportunities.

SB 200 would give priority to projects that are supported by previously adopted local or regional plans, serve a multi-jurisdictional population, include matching funds, or that can be implemented in a timely manner. Property would only be acquired from willing sellers.

The Delta Protection Commission paired with a Delta Conservancy would create a Commission with planning responsibility and a Conservancy with project capability to work together in the same region. This option relies on non-profits or local government to implement. As the following table shows, such relationships already exist in other areas of statewide significance.

Table 7-6		
Commission-Conservancy Partnerships		
Region	Partners	
Lake Tahoe	Tahoe Regional Planning Agency and the California Tahoe Conservancy	
Bay Area	San Francisco Bay Conservation and Development Commission and the State Coastal Conservancy	
California Coast	California Coastal Commission and the State Coastal Conservancy	
Coachella Valley	Coachella Valley Mountains Conservancy and Coachella Valley Conservation Commission	

The Delta Conservancy program would work with landowners, communities, and public agencies to address solutions to development pressure, to allow agriculture and natural resource protection to coexist, and to promote public access and recreation in the Delta.



8.0 APPENDICES AND SUPPORT DOCUMENTS

INSERTS

Insert 1: Delta Conceptual Strategy

APPENDICES

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Appendix 5-2: Marina Slips Latent Demand 2005 - 2020

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